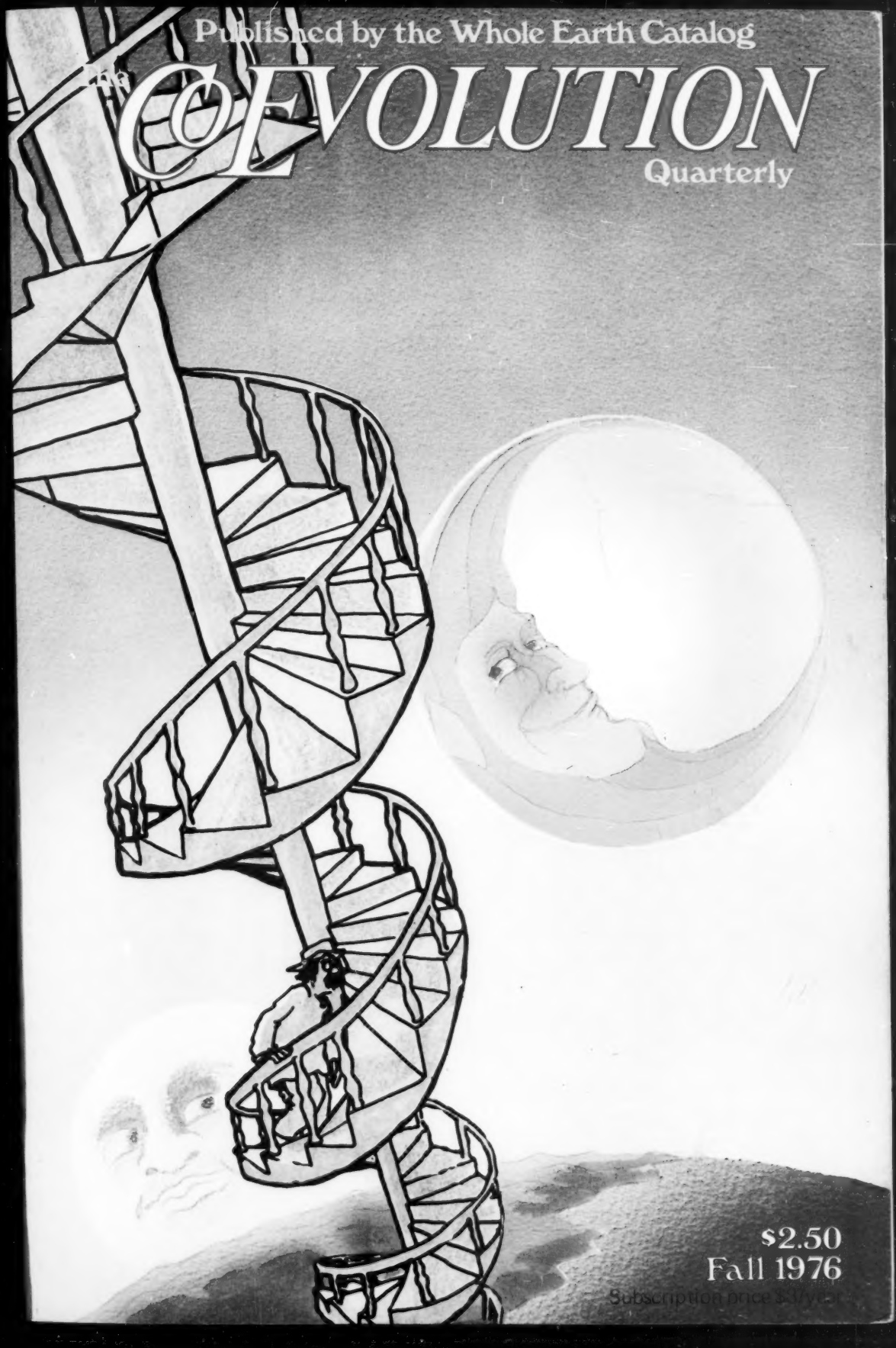
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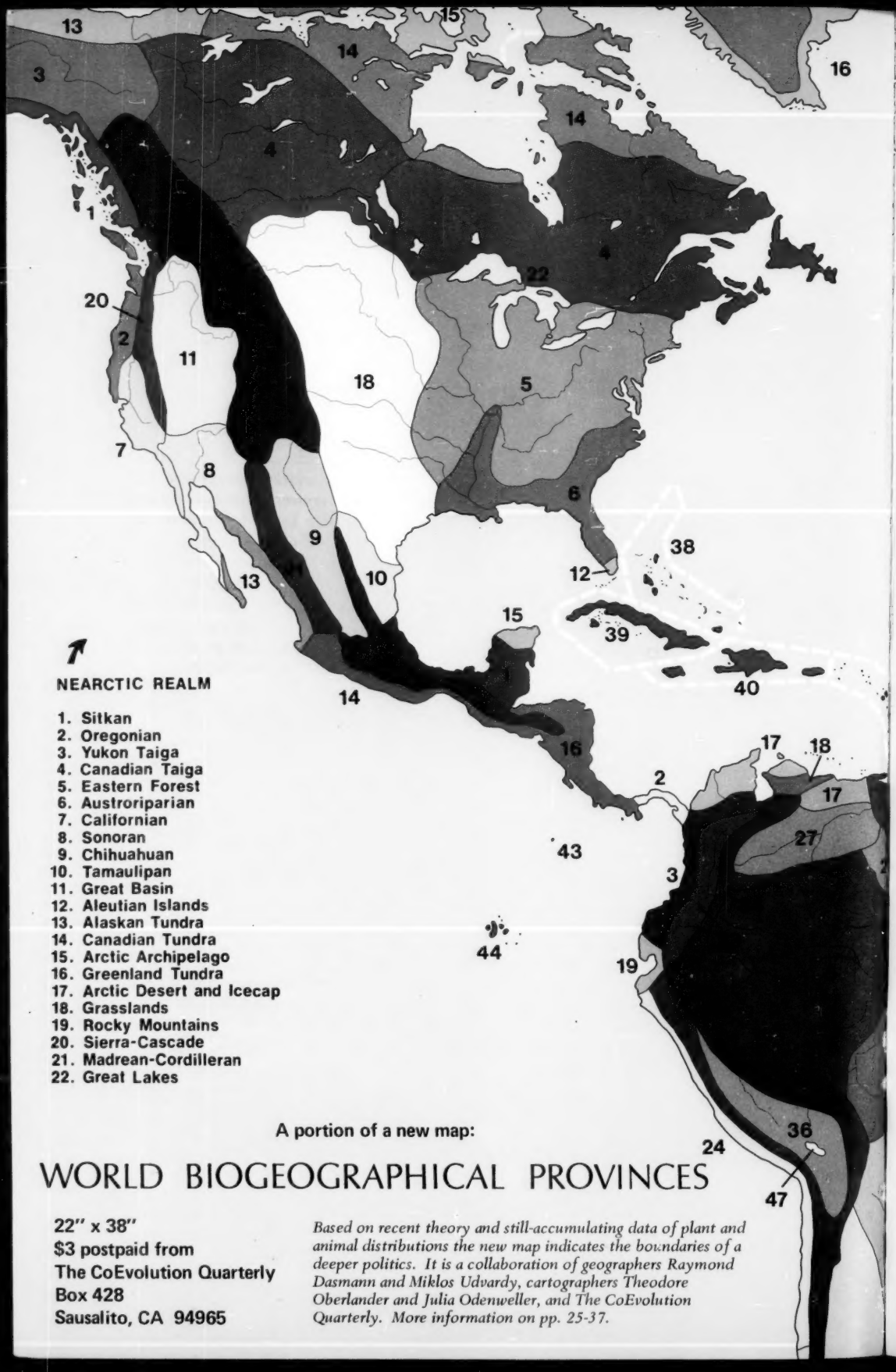

A portion of a new map:

WORLD BIOGEOGRAPHICAL PROVINCES

22" x 38"
$3 postpaid from
The CoEvolution Quarterly
Box 428
Sausalito, CA 94965

Based on recent theory and still-accumulating data of plant and animal distributions the new map indicates the boundaries of a deeper politics. It is a collaboration of geographers Raymond Dasmann and Miklos Udvardy, cartographers Theodore Oberlander and Julia Odenweller, and The CoEvolution Quarterly. More information on pp. 25-37.

NOTICE

UNAWARE CITIZENS OF BIOGEOGRAPHICAL PROVINCES

It is possible to classify people into two groups: ecosystem people and biosphere people. Until the rise of the first civilized empires, all people on earth were ecosystem people. This means they lived within one ecosystem or, at most, a few closely related ecosystems, and depended entirely on the continued functioning of those ecosystems for their survival. Their economies may have been based on hunting, fishing, and food gathering, on shifting or permanent agriculture, or on nomadic pastoralism, but in all cases their ways of life involved a close and intricate relationship between culture and nature. Religious practices and social customs formed intrinsic parts of this relationship and assured that economic activities remained in proper balance with the ecological requirements of their environment.

Biosphere people today are tied in with the global technological and economic system. This frees them from the restraints of any one particular ecosystem, since they can draw upon energy and resources from an economic network which extends throughout the entire biosphere. We need only examine the sources of the food consumed in any modern city to see that they come from virtually all of the continents and oceans of the world. Failure in any one ecosystem does not necessarily threaten the survival of the city, since it can draw more heavily on other ecosystems. This permits biosphere people to override the ecological controls in any one system and, consequently, do far greater damage than could be accomplished by a group which was totally dependent on that particular ecosystem. . . .

Until biosphere people, armed with powers greater than their ancestors could imagine, make use of the wisdom which ecosystem people have so painfully acquired and which their ancestors once had, they remain in peril. Like the gods of old they can make the earth into a paradise, if they so choose and if they use this wisdom, or they can destroy it.

—Raymond Dasmann
Environmental Conservation

NO Apocalypse?!

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Cover: *Dan O'Neill in color. This Spring Dan and a cohort worked up a beautiful series for Sunday comics use, with some encouragement from syndicators. The result was prettier than "Prince Valiant" and funnier, but also nervous-making. The newspapers backed out. Dan sold a couple of the strips to* **National Lampoon** *and put away his airbrush. It's a damned shame.*

–SB

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NO Apocalypse?!

Three remarkable articles follow. Each has a major perception of world-cultural adaptations that are proceeding without benefit of sponsorship, theory, or even much notice. It's a slippery period we are in – quicker, more elusive, and surer of its own crazy balance than we imagined.

–SB

From Present to Future

The Problems of Transition to a Postindustrial Society

BY HERMAN KAHN
WITH WILLIAM BROWN AND LEON MARTEL

It seems to us that we can best focus our discussion by introducing what we call the basic, long-term "multifold trend" of Western culture. This is a set of interacting trends, many of which go back almost 1,000 years, which together seem to us to represent the most basic tendencies in the evolution of Western culture – and, especially since World War II, in much of the rest of the world.

Examining what have been thought of as the largely desirable aspects of this trend gives us a reasonably good idea of what has been meant by the term "progress" in the last 200 - 300 years. It is interesting to realize that at most times in the last 1,000 years elites in various Western subcultures would have been horrified at many of the developments that were to take place in the "next 200 years." While there is some reason to believe that this will be less true of our generation, it would be surprising if the rule did not hold for us -- almost certainly for some developments, perhaps for most. However, what we call the "topping out" phenomenon may limit the kinds of change we in the United States would find most objectionable – that is, in certain areas (crime, violence, drugs, promiscuity, etc.) we expect a reversal of past tendencies to begin very soon.

The basic elements of this multifold trend are outlined below.

1. Declining role of traditional and "intuitive" (that is, common sense) behavior and increasing role of explicit, manipulative rationality and social engineering applied to social, political, cultural and economic issues as well as to shaping and exploiting the material world. Increasing importance of theoretical and academic formulations and knowledge as opposed to experience and on-the-job training. Also, and perhaps inevitably, increasing problems of ritualistic or pseudo-rationality and educated incapacity, as well as various reactions against rationality.

2. Increasingly sensate (that is, empirical, this-worldly, secular, humanistic, pragmatic, manipulative, explicitly rational, utilitarian, contractual and hedonistic) culture;

Can we manage, if the next 200 years see increasing Peace and Prosperity and an absence of world catastrophe such as war, economic collapse, hemispheric famine, etc?

Everyone I know, doom buffs all, have to one extent or another organized their lives around expected social disaster. Me too. That's prudent, and considerable focus and drama results. But not long ago everyone was geared up for Revolution, or for the arrival of God. When neither promptly happened, the believers promptly crumpled.

The possibility of no apocalypse is a subject Herman Kahn and his co-authors have all to themselves. They seem the only ones interested in calculating the likelihood – and are certainly the only ones contemplating the problems – of world-wide success.

Prudence may include bracing ourselves for world affluence.

This article is, verbatim, a chapter from the book, **The Next 200 Years,** *published this Spring. A review, more excerpts, and editorial hand-waving follow on p. 16.*

–SB

recently an almost complete decline of the sacred and morally binding, and a relative erosion of widely accepted taboos and totems; some current signs of limited "romantic" mystic, transcendental or religious counterreactions.

3. Accumulation of scientific and technical knowledge; increasing use of this knowledge as man's most basic resource and a resultant increasing independence of geography and limited local resources.

4. Increasing affluence and (recently) increasing leisure and a revolution of "rising entitlements" as well as rising expectations; both the rich and the poor tend to get richer, almost everywhere.

5. The rise of bourgeois, bureaucratic, technocratic and "meritocratic" elites and specialists; growth of impersonal organizations and institutions; lessened dependence on familial and communal institutions.

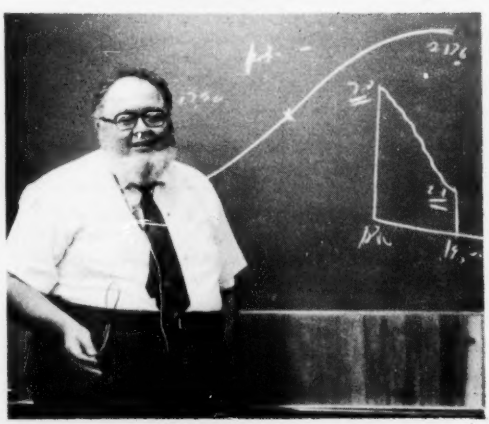
6. Institutionalization of economic development and technological change, especially investment, research and development, innovation, and technological and institutional diffusion; recently an increasingly conscious emphasis on synergisms and serendipities; even more recently, a loss of nerve and growing opposition among upper-middle-class elites to so much "forced" rapid change, but much less opposition by various traditionalist groups in non-Western societies.

7. Worldwide industrialization and modernization; also growing concept and realization of a world ecumene (but ecumene not community, "world city" not "global village," and "world market" not "marketplace") — that is, impersonal and businesslike interactions as opposed to the close human ties implied by the words "community," "village" and "marketplace"; but also a growing, if still fragile, sense of "world public opinion" and of shared responsibility for all human beings.

8. Increasing capability — both private and national — for violence and destruction; growing tolerance for terrorists and politically motivated violence and those who support such activities.

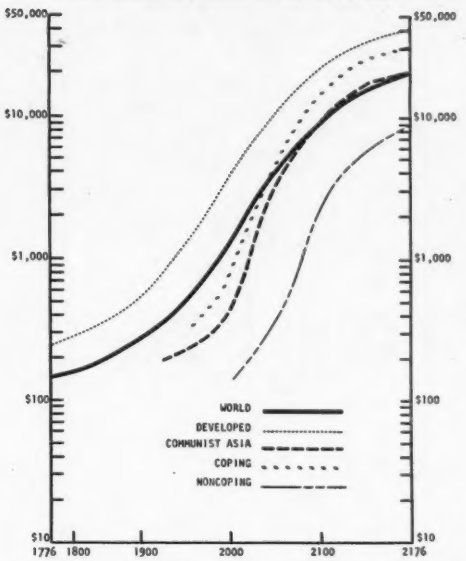
9. Population growth — now explosive but tapering off; economic growth also explosive but may increase even more before tapering off.

10. Urbanization and recently suburbanization and urban sprawl; soon the growth of megalopoles — that is, increasing movement to urban-suburban areas as opposed to rural; decreasing peak densities within these areas; partial merging and overlaps of once separate urban areas.



Herman Kahn

Gross World Product Per Capita, 1776–2176



"Surprise-free" projection of world economic activity. Developed nations include Europe, North America, Australia, Japan, Israel, and Persian Gulf. Coping nations are those with annual per capita incomes of $400/year and growing more than 5% annually. Non-coping nations are below that level and import more than they export.

11. Decreasing importance of primary and (recently) secondary occupations and goals; soon a shift from tertiary to quaternary occupations and goals; eventual emergence of postindustrial economy, institutions and culture.

12. Recent emergence of superindustrial economy and resultant dominating character of its impact on the social and physical environment.

13. Increasing literacy and role of mass formal education; recently the "knowledge industry" and increasing numbers and role of intellectuals and of decision-making and attitudes based on secondhand knowledge (for example, books, lectures and staff reports) as opposed to direct personal experience.

14. Future-oriented thinking, discussion and planning; recently some improvement in methodologies and tools — also some retrogression in the general level of discussion (even by futurologists).

15. Increasing universality of the multifold trend — but an increasingly felt need for national, ethnic, communal or other group differentiation and identification.

16. For 1,000 years, a more or less increasing tempo of change in all of the above; but perhaps a slowing down in next two or three decades — at least in some areas.

Listing the elements separately leads us into some arbitrary and artificial distinctions and categories, but one could think of this multifold trend as a single entity, the various elements overlapping, reinforcing and changing each other. Every element is both a driving force and a consequence (although some should be viewed more as one than the other). While the multifold trend as presented is more applicable to Western culture than to the world as a whole, it is becoming increasingly universal.

[more →]

TABLE 17. 1985 TECHNOLOGICAL CRISES

By 1985 the following areas are likely to give rise to special technological dangers:

1. *Intrinsically dangerous technology*
2. *Gradual worldwide and/or national contamination or degradation of the environment*
3. *Spectacular and/or multinational contamination or degradation of the environment*
4. *Dangerous internal political issues*
5. *Upsetting international consequences*
6. *Dangerous personal choices*
7. *Bizarre issues.*

1. *Intrinsically dangerous technology*
   - a. *Modern means of mass destruction*
   - b. *Nuclear reactors – fission or fusion*
   - c. *Nuclear explosives, high-speed gas centrifuges, etc.*
   - d. *Research missiles, satellite launchers, commercial aircraft, etc.*
   - e. *Biological and chemical "progress"*
   - f. *Molecular biology and genetics*
   - g. *"Mind control"*
   - h. *New techniques for insurgency, criminality, terror or ordinary violence*
   - i. *New techniques for counterinsurgency or imposition of order*
   - j. *New serendipities and synergisms*
2. *Gradual worldwide and/or national contamination or degradation of the environment*
   - a. *Radioactive debris from various peaceful nuclear uses*
   - b. *Possible greenhouse or other effects from increased CO_2 in the atmosphere, new ice age because of dust in stratosphere, damage to ozone layer, etc.*
   - c. *Other special dangerous wastes – methyl mercury, PCB, etc.*
   - d. *Waste heat*
   - e. *Other less dangerous but environment degrading wastes such as debris and garbage*
   - f. *Noise, ugliness and other annoying by-products of many modern activities*
   - g. *Excessive urbanization*
   - h. *Excessive overcrowding*
   - i. *Excessive tourism*
   - j. *Insecticides, fertilizers, growth "chemicals," food additives, plastic containers, etc.*
3. *Spectacular and/or multinational contamination or degradation of the environment*
   - a. *Nuclear war*
   - b. *Nuclear testing*
   - c. *Bacteriological and chemical war or accident*
   - d. *Artificial moons*
   - e. *Supersonic transportation (shock waves)*
   - f. *Weather control*
   - g. *Big "geomorphological" projects*
   - h. *Million-ton tankers (Torrey Canyon was only 111,825 tons) and million-pound planes*
   - i. *Other enterprise or mechanism of "excessive" size*
4. *Dangerous internal political issues*
   - a. *Computerized records*
   - b. *Other computerized surveillance*
   - c. *Other advanced techniques for surveillance*
   - d. *Excessively degradable (or unreliably reassuring) centralized capabilities*
   - e. *Improved knowledge of and techniques for agitprop and other means of creating disturbances*
   - f. *Improved knowledge of, and techniques for, preventing disturbances*
   - g. *Complex or critical governmental issues leading to either "technocracy" or "Caesarism"*
   - h. *Nuclear weapons affecting internal politics*
   - i. *Excessively illusioned attitudes*
   - j. *Other dangerous attitudes*
5. *Upsetting international consequences*
   - a. *Both new and "traditional" demonstration effects*
   - b. *Technological obsolescence of "unskilled" labor*
   - c. *New synthetics – e.g., coffee, oil, etc.*
   - d. *Force modernization*
   - e. *Growing guilt feelings by many in wealthy nations – particularly among the alienated or young*
   - f. *Inexpensive and widely available "realistic" communications and physical travel*
   - g. *Accelerated "brain drains"*
   - h. *Cheap (synthetic?) food*
   - i. *Cheap education*
   - j. *Control and exploitation of the oceans, space, moon*
6. *Dangerous personal choices*
   - a. *Sex determination*
   - b. *Other genetic engineering*
   - c. *Psychedelic and mood-affecting drugs*
   - d. *Electronic stimulation of pleasure centers*
   - e. *Other methods of sensual satisfaction*
   - f. *Excessive permissiveness and indulgence*
   - g. *Dropping out and other alienation*
   - h. *Excessive narcissism or other self-regard*
   - i. *Super-cosmetology*
   - j. *Lengthy hibernation*
7. *Bizarre issues*
   - a. *Generational changes – e.g., extended longevity*
   - b. *Mechanically dependent humans – e.g., pacemakers*
   - c. *Life and death for an individual – e.g., artificial kidneys, etc.*
   - d. *New forms of humanity – e.g., "live" computers*
   - e. *"Forcible" birth control for "impossible" groups*
   - f. *Other external controls or influence on what should be a personal or even institutionally private choice*
   - g. *Life and death or other control of "outlaw" societies which have not yet committed any traditional crime*
   - h. *Even the continuation of the nation-state system*
   - i. *Controlling and limiting change and innovation*
   - j. *Radical ecological changes on a planetary scale*
   - k. *Interplanetary contamination*

We have already emphasized that we do not expect the road to the year 2000, much less 2176, to be smooth. There are lots of wiggles and reversals in the basic trends. Our studies have identified almost 70 separate problems which we call the "1985 Technological Crises" (see Table 17); we expect that some of these will be dealt with well, but many will not be. The future may well hold in store not only the familiar "four horsemen" (war, famine, plague and civil disorder), but more modern catastrophes as well. A useful analogy can be made between the first half of the 20th century and our present situation. If anyone in 1910 had used the period 1890-1910 as a baseline and applied current techniques to make projections for the next 50 years and restricted himself to economic and technological variables, he would have made quite accurate long-term predictions (that is, as of 1960), though he might have been off for much of the intervening period. Events such as two world wars, the Great Depression, bloody revolutions and many economic and technological innovations first caused lags in the curve of development and then produced a "catching up" phenomenon. The forces behind technological and economic growth had a surprising staying power and intensity that enabled them to

Composting at Findhorn Community, 1974. Says Kahn, "This return to the country isn't a matter of necessity. It's a luxury of affluence, like the court ladies of Louis XV playing milkmaid. It's Versailles."

make up in prosperous years for deviations from basic trends in troubled ones. This suggests that the trends disclosed during the period 1890-1910 were relatively basic, and that much of the rest of the first half of the 20th century was "aberrant" – a position we would accept.

We are not arguing that this basic trend in economics and technological variables will continue indefinitely – quite the contrary, as we have seen in the S-shaped curves we have projected for population and economic growth. But we do believe it will continue, even if it is with the "topping out" and other modifications indicated.

It is most useful at this point to concentrate first on the next decade or two, for which we have a fairly good concept of what might happen, and then treat the later years in more general terms. The short-term projection given below essentially assumes a satisfactory recovery from the current recession, a relatively successful control of inflation and a reasonably stable world political order. And, as always, it also assumes that there is no catastrophe sufficiently large to change drastically the basic multifold trend. Looking, therefore, at just the next two decades, we would assume the period would be marked by the following features:

1. A basic change will occur in the character of the two fundamental curves of world population and GWP over time. Both curves should pass through a point of inflection (the population curve may have already passed through this point), so that from then on the metaphor of (worldwide) exponential growth will be increasingly misleading.

2. Barring extreme mismanagement or bad luck, the period 1976-85 should be characterized by the highest average rate of world economic growth in history, perhaps 6 percent, though by 1985 or soon thereafter the slowdown of the upper half of the distorted S-shaped curve should begin to be felt. At least for a while, an increasing emphasis is likely to be placed on monetary problems, commodity issues (including food, energy and resources) and neo-Malthusian concerns – and, of course, some possibility exists of a renewed depression. Some of the more significant themes of this decade seem likely to be:

- **a. The demographic or GWP transition of No. 1 above.**
- **b. An unprecedented period, worldwide, of economic growth, world peace, capital movements, world trade, tourism, etc. – but as in the previous *Belle Epoque* (1901-13) also a period of anarchistic movements, terrorism, *fin de siecle* feelings and many "tolerated" excesses.**
- **c. The relatively full emergence of the superindustrial economy (which is also an emerging postindustrial economy).**
- **d. A decade or two of technological crises (and of technological solutions).**
- **e. The end of the post-World War II system politically, economically and financially.**
- **f. A decade of institutional crises (and of new developments and institutions to cope with these crises).**
- **g. A (troubled?) period of value/attitude transitions.**
- **h. The continued emergence of East Asia on the Asian and world stages – but with Japan more likely than China to play the most crucial role, at least for a time.**
- **i. Nuclear proliferation (mostly clandestine and particularly – or solely – in the Third World.)**

Joseph Altmann

Jane and Herman Kahn in their garden. Kahn told an audience at Amherst, Massachusetts, this Spring, "With the time and expense I figure those tomatoes cost about $5 apiece." Someone asked, "Are they worth it?" Said Kahn, "Of course."

j. The opening up of new sources of energy and other resources.

3. An increasingly multipolar world which should result in a steady and nearly complete erosion of World War II politics (Cold War; distinction among World War II victors, losers and neutrals; colonization/decolonization issues; etc.), with the following possible consequences and developments:

a. More than 20 large nations that can be ranked in 1985 by GNP as follows (in billions of 1975 dollars and with an estimated range of plus-or-minus 20 percent around the indicated levels):

$2,500 United States
1,200 Japan and U.S.S.R.
600 France and West Germany
450 China
250 Canada, Italy, United Kingdom
150 Brazil, India, Mexico, East Germany, Poland, and perhaps Iran
75 Netherlands, Sweden, Belgium, Australia, Argentina, Saudi Arabia and Switzerland

b. Rise of Japan as an economic, financial and technological superstate (and soon afterward as a political or military superpower also).

c. Full re-emergence of both Germanys (but with some critical political disabilities remaining).

d. Emergence of France as the largest national economy (at least in terms of nominal "purchasing power" or GNP) in Western Europe.

e. U.S.-Soviet strategic equality or possibly Soviet strategic superiority, accompanied by a relative decline of both in power, prestige and influence.

f. Possible Europe-wide security arrangements; possibly also a growing "Finlandization" of Europe, or other tendency for Europeans to be excessively conciliatory to the Soviets.

g. Some degree of settlement or normalization of national relations between the two sides of the divided nations of Korea and Germany, but the persistence of a high degree of separate national identity and a refusal, on one or both sides, to recognize such separation in permanent legal and moral terms.

h. A continued feeling that nuclear war, or even large conventional war, is unthinkable (the divided countries India/Pakistan, and Arab/Israel could be exceptions, though even these confrontations may seem increasingly stable), but low-level violence, both official and unofficial, persists or even increases.

i. An evolving European Economic Community (with perhaps a new role for France as the leading nation of the community); also a possible breakup of the current EEC.

j. Possible creation of an East European EEC; most likely a growing independence of East European nations, perhaps even an explosive weakening of Soviet control.

k. The creation, at least ad hoc and perhaps even self-consciously, of an economically dynamic Pacific TIA* — perhaps similarly for a Western Europe-North Africa-Middle East-Central Africa TIA.

l. Between 5 and 10 clandestine nuclear powers by the late 1980's (among the possibilities: Israel, Taiwan, South Korea, Pakistan, Iran, Egypt, Libya, Saudi Arabia, Brazil and Argentina).

*Trading investment area — a group of countries who send and receive at least half their foreign trade and investments to and from each other.

m. Many other new possibilities: new alliances, new arms races, a politically unified Europe, an intensely isolationist and/or nationalist U.S., a deeply troubled and perhaps inwardly oriented U.S.S.R., and a unified and aggressive communist Indochina, a communist Italy or Portugal, a left- or right-wing Japan, a business-oriented, revisionist China, new trouble spots and confrontations, a Persian Gulf dominated by Iran.

4. This economic and technological ecumene will set a context for further development of a unified but multipolar, partially competitive, mostly global and technological economy characterized by:

a. A general understanding of the process and techniques for sustained economic development; also a worldwide capability for modern industry and technology, and the development (erratic and incomplete but still largely effective) of the necessary domestic and international institutions to sustain such economic growth.

b. A worldwide Green Revolution (including new technologies) and enormous expansion in availability of energy and mineral resources, but, for the next few years, real difficulties in furnishing food, energy and fertilizer to the poor at a reliably low price. By the end of the period, or even sooner, there should be, as a result of technological progress and huge investment (including the intensive exploitation of the Arctic regions, oceans and many other currently unexploited areas), a surplus (as compared to today) of energy, resources and commodities.

c. Despite much hostility, a continuing, even growing importance of multinational corporations as innovators and diffusers of economic activity and as engines of rapid growth.

d. A great development of indexed contracts and financial instruments and perhaps a renewed role for gold in the international monetary system (the latter mainly as a store of value and perhaps as *numeraire*). The SDR (special drawing rights) will also be developed as a world currency, but will almost certainly fail to achieve full acceptance. General recognition of inflation and "poverty of affluence" as basic and primary problems that compete with the need for full employment and mitigate the downside of the business cycle.

e. Some development of "futurology ideologies" and the reinvigoration of the concept of "progress," as opposed to "limits to growth" and "gap" ideologies, but these will also thrive in some quarters.

f. Sustained growth in international trade, communications, travel, investment, etc., and high (3-15 percent) GNP growth almost everywhere, especially in the "six dynamic areas" (Japan, "little neo-Sinic cultures,"* Eastern Europe, southern Europe, part of Latin America,** most OPEC countries).

g. Increasing worldwide unity in technology, private industry, commercial and financial institutions, but relatively little unity in international legal and political institutions.

h. Increasing problems of unemployment in less-developed countries; some partial solutions such as development of both official and unofficial institutions to move the labor to the work and the work to the labor; also two-way "brain drains."

*South Korea, Taiwan, Hong Kong, Singapore, perhaps North Korea and both Vietnams, and, if there are not sizable political and security problems, Thailand and Malaysia (respectively 10 percent and 35 percent ethnic Chinese).

**Brazil, Mexico, Colombia and perhaps others.

i. Full emergence and partial solution or adaptation to many aspects of the 1985 technological crises.

j. But little or no overall long-term catastrophes with environment, pollution or the scarcity of resources, though many temporary crises will occur and doubtless some regional catastrophes (particularly with respect to food or pollution). Some thalidomide-type catastrophes. Many false alarms – for example, the banning of cyclamates.

5. Some acceleration, continuation and selective topping out of the multifold trend of Western culture:

a. Particularly among upper-middle-class elites in the "Atlantic Protestant culture" there should be a continued erosion of the traditional societal levers, a search for meaning and purpose, some cultural confusion, ideological polarization, social conflict, growth of discretionary behavior, etc.

b. Increasingly revisionist communism, capitalism and Christianity in Europe and the Western Hemisphere, a continued crisis of liberalism, some persistence and even a new eruption of the counterculture.

c. Populist, conservative, backlash, or "counterreformation" movements.

d. Increasing problem worldwide of educated incapacity – that is, illusioned, irrelevant, ideological or other impractical argumentation and attitude among intellectual elites, accompanied by greater emphasis on feelings and emotions among some of these.

e. Further reaction to emerging postindustrial economies in developed nations (with about 25 percent of world's population) and in enclaves elsewhere, including:

1) "New" political milieus: continued great influence of "humanist left" in at least the high culture of developed nations (but particularly in the U.S. and the northwest tier of Europe), and also a conservative reaction and even a large conservative counter-reformation in universities and the high culture.

2) Emergence of "mosaic cultures" (at least in U.S.) incorporating esoteric, deviant, communal and experimental life-styles. Some increase in anarchistic behavior and movements. Further ideological and political development, as well as continued erosion, of the counterculture.

3) Possible successful synthesis between old and new, especially in France, Switzerland, Japan, Singapore and some of the "Atlantic Protestant" areas.

4) Other developments of postindustrial societal institutions and postindustrial cultures.

6. A relatively anarchic but also relatively orderly and unified world, but with new issues of domestic and international stability:

a. Much greater attention to basic human and emotional needs – for example, to the Chinese Communist guarantees (adequate food, clothing, shelter, health care, education, retirement and funeral expenses) and to Abraham H. Maslow's hierarchy of values and life goals (different emphases and priorities relative to one's affluence and state of safety).

b. Continuing growth in both desirable and undesirable discretionary behavior; corresponding worldwide "law and order" issues – possible unconventional or even bizarre use of terror, violence, subversion, unilateral changes in international rules.

c. Possibility of some bizarre ad hoc countermeasures.

d. Some trend toward separatist and regionalist movements in many formerly stable nation-states as well as postwar decolonized states.

7. Emergence of many new technologies in such areas as energy sources, transportation, pollution control, food production, communications, genetics, other biological and related sciences; and, perhaps equally important, fantastic increase in the capability of information-processing systems and automation.

8. Initial, but not necessarily successful, moves toward a huge expansion into outer space. Much should be learned about the likely possibilities for outer space – and if these turn out to be favorable, a basis laid for perhaps an explosive exploitation and colonization in the 21st century.

9. Other important (both significant and insignificant) surprises and turning points.

10. Last, the world will no longer be thought of as being divided into a rich OECD world composed mostly of Japan and Western cultures, a communist world, and a Third World. Instead, the Comecon and OECD worlds and such areas as the little neo-Sinic cultures and some of the Persian Gulf countries will probably be lumped together as a highly developed world. Communist Asia will be considered a rapidly developing and quite successful culture, even though nominally with a relatively low GNP per capita (about $1,000 by the year 2000). There will be a relatively successful portion (about half) of the Third World which should attain about $2,000 per capita by the year 2000 and a still desperately poor group, mostly concentrated in the Indian subcontinent but including limited parts of Latin America and Africa, which could (with reasonable policies) average about $200 per capita by the year 2000.

THE EROSION OF TRADITIONAL SOCIETAL LEVERS

It is clear that the world of the immediate future will be confusing, complex and very difficult to cope with. Among the features cited in this short-term projection that concern us most – and one to be considered a central issue for the transition, and possibly for the long term as well – is the erosion of the traditional societal levels and their replacement by other values, both transient and relatively permanent. It is primarily the upper middle class which has begun to experience this erosion at this point; perhaps three-fourths of the American people still share most traditional values. We believe, however, that the erosion may eventually affect the rest of society. Most importantly, we do not believe that America will perform adequately if the children of the upper classes remain unsocialized: Too much productive capacity will be lost, and too much damage will be done by them. But if we are correct and traditional values cannot be restored, then Americans will have to import, invent and inculcate new values. It is optimistic to believe that this can be done easily and consciously. Values are not ordinarily created *ex nihilo* or by speeches, but are formed, like nations, by blood and history and by slow evolution and growth. To the extent that it can be done, however, we should encourage the evolution of American values in certain directions. Some of these new values emerged in the early 1960's in many prestige universities and elsewhere, and while they were largely submerged during the middle and late 1960's, we believe that they can be revived. Indeed, the current "transition" and/or search for meaning and purpose seems likely to encourage them – particularly in the upper and upper middle class (that is, the high culture).

First among the possibilities is the graceful acceptance of affluence. Americans are going to be enormously wealthy, so they must learn how to spend their wealth without becoming satiated, disappointed or fashionably antimaterialistic. They have to learn to take certain everyday affairs seriously (without becoming obsessed with them) in order to avoid boredom, and to compensate for the fact that they no longer have life and death struggles to engage their emotions. They have to learn to be gentlemen and ladies who pass their time doing difficult – if not useful – things well.

Perhaps such a life sounds unbearably petty, but this is the result of not having to fight barbarians, Nazis, famine or disease or to conquer the frontier. Conflicts like these may have added flavor to life, but most people have always claimed that they would rather not have to fight for survival. In any event, hopefully such things are largely behind us, though doubtless some threats will remain and even grow if they are ignored too much. In their relative absence, Americans must be like the Athenians, who loved gymnastics. If there was a war, they performed gymnastics to stay fit in order to fight. If there was peace, they had more time for gymnastics. Unfortunately, Americans tend to be more like the Spartans and Romans, who got into shape to fight anticipated wars, but tended toward sloth in peacetime and prosperity. We must learn the virtues of family life and conversation and social interaction with our friends. Epicurean (in both the Greek and the modern senses) values will be vital to many if Americans are to spend their leisure time at home without killing everyone in sight because of overfamiliarity and boredom.

A primary problem will lie with government. If the developed world comes to seem relatively safe and affluent and if most of the remaining issues are regarded as conditions which may evolve over time but not as problems to be dealt with immediately, then governing may become an uncharismatic, low-morale profession. There may be no great programs or crusades to attract people, but it will be just as necessary then as it is now to recruit intellectually capable individuals into government service. America will be a mature nation at last, and will have accepted the democratic ideal as far as is practical. Externally, some may choose to go adventuring in outer space or to the bottom of the sea, but most will be satisfied to watch everyone become richer and seemingly safer – and enjoy these adventures vicariously.

If government is to continue in such an environment, a class of people will have to be developed who serve because they know it is necessary to do so. Their model will be the English civil service, their goal will be maintenance and their motto will be the epigram of William, Prince of Orange: "It is not

Americans are going to be enormously wealthy, so they must learn how to spend their wealth without becoming satiated, disappointed or fashionably antimaterialistic. They have to learn to take certain everyday affairs seriously (without becoming obsessed with them) in order to avoid boredom, and to compensate for the fact that they no longer have life and death struggles to engage their emotions. They have to learn to be gentlemen and ladies who pass their time doing difficult – if not useful – things well.

necessary to hope in order to act, nor succeed in order to persevere." Such men will most resemble the stoics who ran the Roman Empire for hundreds of years out of a sense of duty, while the rest of the populace pursued their private interests. There is, in fact, a group in the United States who already have these characteristics – that is, many military officers, who are expected to separate themselves from their families, risk their lives and perform menial tasks in peacetime and who accept their duty like the soldiers they are.

The Founding Fathers believed that a democracy was impossible where the people lacked the republican virtues, by which they meant moderation, self-discipline and modesty. We have attempted to suggest some of the rationale behind this position and how those virtues may be regained.

HOW SAFE WILL THE WORLD BE?

We have used such words as "relatively" and "apparent" in discussing our future safety. How realistic is this "apparent" safety? It should be understood that this impression of safety, whether correct or not, can be powerful and overwhelming – at least as related to most kinds of military threats that might have been taken seriously in another era. Thus the Australian government recently announced that its defense planning would be based on the assumption that no serious confrontation or crisis was likely to arise in the next decade. To accept this assumption, one must believe that 13.5 million people would not be challenged in their occupation of a continent-sized area with abundant resources and would not need to defend their possession of these scarce resources. Indeed, much of the developed world generally thinks in terms of "free security," and little connection is made between defense efforts and feelings of security. Ask any citizen of Canada or the United Kingdom (or of many other nations) if he would feel safer if the national defense budget were doubled or in greater danger if it was halved. In most cases the answer would be no to both questions.

Plausible as the Australian position may be, it has at least one serious defect. Such policies almost always lead to a further concept of "safe for the next ten years" as measured from a moving present. This allows for mobilization, if there is a serious perceived deterioration in international affairs, but by then there would almost certainly be great resistance to recognizing such deterioration and to reacting appropriately. Equally serious is the fact that the policy leaves the country almost completely unprepared for sudden changes in the security situation. It also encourages an almost reckless degree of complacency and carelessness.

It should be clear that it would be quite easy to write scenarios for the late 1980's and the 1990's in which the world degenerates into a kind of jungle – or in which some movement like communism suddenly takes on renewed vitality and dynamism – and for some of these scenarios there is no need to wait for the late 1980's. It would take us too far afield to describe the various possibilities for the weakening of the Western nations on the one hand and for the emergence of dangerous challenges on the other.

We will content ourselves here only with the observation that it is unlikely that the history of large-scale international violence will be terminated simply because the world will have passed through the population and GWP inflection points – even though these two events do have many stabilizing aspects and do make conceivable and plausible (perhaps too plausible) an unprecedented degree of commitment to the status quo and peaceful evolution.

TRANSITIONAL PROBLEMS OF MORALE, ATTITUDES AND THE QUALITY OF LIFE

In the transition to postindustrial society, a vast group of intellectuals will be created as the need for expertise increases (and for self-serving reasons as well). These intellectuals may suffer from the most intense anomie of all social groups. In becoming a mass profession, they open themselves to sharper criticism as a group because their average standards necessarily decline, their contacts with outsiders wither, they become less self-conscious as a stratum but more actively self-serving, and they make clear their belief that they should wield social power. As this group's social status declines and its numbers rise, various segments will be organized, sometimes as an agency of government or other social institutions. Thus a key new form of social conflict becomes institutionalized. At the same time society faces a momentous political and social choice regarding the degree to which scholarship will be fragmented and autonomous or unified and harnessed to the tasks of other institutions. If one considers the acceptance

of the zero economic growth thesis currently put forward by some groups, together with a willingness to organize and harness scholarship, one can imagine a trend over several centuries toward an essentially Confucian meritocratic social order dominated by self-serving and self-justifying – even if also communal and paternalistic – university-trained mandarins and bureaucracies.

We should also note that, just as the auspicious trends carrying us from feudal to industrial to postindustrial society have generated various new and pressing problems, so some of the projected auspicious trends of postindustrial society will certainly generate their own forms of dissatisfaction. For instance, some writers allege that a leisure revolution is likely to occur in the United States. Professionals and managerial workers have good reason to be skeptical about the growing leisure of postindustrial society, but it is at least imaginable that substantial proportions of the population will eventually work a three-day week and not "moonlight" during their four nonworking days. If so, the intense boredom that afflicted the aristocracy of the 18th and 19th centuries could return with a vengeance – but probably less as a mass phenomenon than as one which afflicts various self-conscious elites.

In the emerging postindustrial society the scale of industry expands to the point where the TVA becomes a middle-sized project, and the scope expands to include most of a continent if not the world. The coexistence of this phenomenon, which we call the "superindustrial society," with the post-industrial society, creates fundamental threats to the environmental stability and to recreational uses of the environment. The side effects of the huge scale and scope of modern industry are, of course, exacerbated by rising population – less of a long-run problem than is commonly supposed, but for the present it can cause severe difficulties in certain parts of the world such as India and China. As already stated, we do not believe the world in general or the United States in particular will suffer from long-term shortages of energy or resources, or that continued superindustrial development is inconsistent with a clean environment. Nor does population growth in the United States need to create overcrowding of living areas in any strong sense – as we have already demonstrated in our demographic discussions. However, superindustrial society does imply the following: difficult transitions to new sources of energy and other resources, and the necessity of new regulations and vast new expenditures to maintain a clean environment, to prevent the almost complete disappearance of wilderness areas in the United States and the overuse of existing recreational facilities to the point where the continued existence of some will be endangered.

Thus it could be said that to a great extent the problems of modern society, and particularly those affecting the quality of life, derive not from major social failures but from major social successes; for as we have seen, the most pervasive and deeply rooted problems can result from the successful transition from pre-industrial to industrial to super-industrial and postindustrial societies. This is why the discussion of quality of life takes for granted the successful performance of traditional governmental functions and the maintenance of high per capita income. Quality of life now usually refers to a set of problems that are overwhelmingly the consequences of success: anomie resulting from successful promotion of social mobility; blue-collar "blues" resulting from the successful transition out of the class structure and struggles of early industrial society; pollution resulting from successful rapid growth; perverse outbreaks of the martial spirit as a result of a generally peaceful world and the imposition of peaceful values; and intense concern with recreation and leisure issues because so many have nothing more important to be intensely concerned about. Other "failures of success" are listed in Table 18. It seems to us that recognition of the fact that today's problems arise, not from centuries of human failure and rapaciousness, but as a result of extraordinary and multiple successes in attaining the goals mankind has cherished most is bound to have a positive and healthy effect on social morale.

We referred in Chapter I to the quaternary activities which we assume will be most prevalent and important in a mature postindustrial society, but did not give a very clear or specific picture of postindustrial life. We were, in fact, deliberately vague and eclectic because we simply do not know what the United States or other nations will look like in 2176, even if trends do develop as we have projected. We do have some ideas of what may happen in the near term, though, and more important, we have strong fears concerning that near term and the emerging transition to a postindustrial society.

Consider, for example, certain South Pacific islands which, to many outsiders, seemed to be almost a Garden of Eden; in this idyllic economy, many of the necessities of life – perhaps all – came virtually free. On such islands anthropologists invariably found elaborate structures of taboos, totems and rituals. But what outwardly was an earthly paradise was, in some ways, internally a psychological hell, at least by current standards. One is tempted to argue, perhaps too quickly, that there is something in the human psyche which requires that the absence of objective external pressures be balanced by internal psychological structures and goals. Whether we accept this simple formulation or not, it may be a clue to one major set of issues. Actually, we argue that some cultures adapt more easily to affluence and safety than others. Indeed, we would hazard a guess that the "Atlantic Protestant culture" is one that has relative difficulty in adapting to wealth and safety, while the French and Chinese cultures do so more easily.

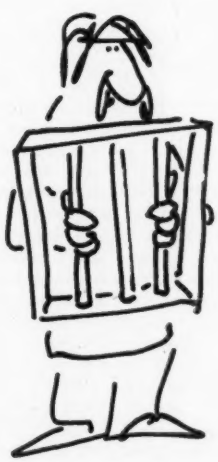
John Maynard Keynes, in his famous essay "Economic Possibilities For Our Grandchildren," provides us with some interesting insights into this problem:

Table 18. SOME FAILURES OF SUCCESS

We have	*But we also have*
1. Affluence	1. No need to wait for possessions or most of what we desire, hence relatively little need for self-discipline. As a result people are at the same time overly concerned with satisfying their material wants and satiated, bored and petulant when they do and furious if they do not receive what they want immediately.
2. Continuous economic growth, technological improvements	2. Impossible demands made on the government: Steady growth uninterrupted by business cycles is required as a matter of course; unrealistically high growth rates are demanded; all groups in society must grow economically at the same rate so that no one is left behind. Improvements in technology encourage unrealistic expectations elsewhere.
3. Mass consumption	3. Aesthetic and commercial standards are determined by the tastes of the masses.
4. Economic security, little real poverty	4. Emphasis on relative poverty, hence a desire for radical egalitarianism.
5. Physical safety, good health, longevity	5. A neurotic concern with avoiding pain and death. Alternatively, the lack of genuine danger and risks leads to the creation of artificial and often meaningless risks for the sake of thrills.
6. Government "for the people"	6. No realization that there are goals higher than the welfare of the people — e.g., the glory of God, national honor, great projects and achievements.
7. The belief that human beings and human life are sacred and the only absolute	7. The belief that nothing is more important than human life, hence that nothing is worth dying (or killing) for. Loss of aristocratic and uplifting ideals and of various distinctions between superior and inferior performance and individuals.
8. Rationalism and the elimination of superstition	8. The loss of tradition, patriotism, faith: everything which cannot be justified by reason cannot be justified.
9. Meritocracy	9. No sudden rises to power. Everyone must show his worth by working his way up the bureaucracy — and by bureaucratic and meritocratic techniques. Explanation and rationalization become more important than achievement and success. Further, by the time they get to the top, people have lost much spirit. Hence fewer young, idiosyncratic hotheads at the top to shake things up. Also, no respect for experience which does not constantly prove its worth by meritocratic and bureaucratic criteria.
10. An open, classless society	10. No sense of one's proper place in society. In traditional societies, if you are born an aristocrat, you die an aristocrat. Now, when you rise upward, you don't know when to stop striving. Thus, you have ceaseless struggles for more money and power — or ceaseless struggles against any dinstinctions of class or privilege — earned or unearned.

I draw the conclusion that, assuming no important wars and no important increase in population, the economic problem may be solved, or be at least within sight of solution, within a hundred years. This means that the economic problem is not — if we look into the future — the permanent problem of the human race. . . .

I see us free, therefore, to return to some of the most sure and certain principles of religion and traditional virtue — that avarice is a vice, that the exaction of usury is a misdemeanour, and the love of money is detestable, that those walk most truly in the paths of virtue and sane wisdom who take least thought for the morrow. We shall once more value ends above means and prefer the good to the useful. We shall honour those who can teach us how to pluck the hour and the day virtuously and



G. Russ Youngreen

Americans must be like the Athenians, who loved gymnastics. If there was a war, they performed gymnastics to stay fit in order to fight. If there was peace, they had more time for gymnastics. Unfortunately, Americans tend to be more like the Spartans and Romans, who got into shape to fight anticipated wars, but tended toward sloth in peacetime and prosperity.

Red-figured bowl, early 5th Century B.C. depicting two Olympic jumpers and a judge. From: **Olympia – Gods, Artists, and Athletes**, *by Ludwig Drees (Praeger, 1968).*

well. The delightful people who are capable of taking direct enjoyment in things, the lilies of the field who toil not, neither do they spin.

But beware! *The time for all this is not yet.* For at least another hundred years we must pretend to ourselves and to everyone that fair is foul and foul is fair; for foul is useful and fair is not. Avarice and usury and precaution must be our gods for a little longer still. For only they can lead us out of the tunnel of economic necessity into daylight.*

Keynes's perceptions may be somewhat romantic – we do not feel that the future belongs to the kind of "flower children" he describes, who in effect (in our terms) "drop out" of contact with most external reality – but we do believe that there will be strong trends in the direction he indicates. And we would like to endorse – in fact, emphasize strongly – the thought of his last paragraph.

We would argue that many of the problems one found in Sweden, Holland, the United States, and to a lesser degree in Canada and Australia in the late 1960's and early 1970's were products of the premature introduction to upper-middle-class elites of some of the characteristics of postindustrial culture. It should be noted that in many ways the country most severely affected was Holland – an interesting phenomenon because Holland had no Vietnam, no race problem, no problem of poverty. Indeed, even its pollution is mostly imported.

We can clarify one kind of transitional problem by considering an image of the United States in the year 2000. At that point it should have about 250 million citizens, of which 50 percent will probably be in the labor force – perhaps 100 to 125 million workers. If we assume the lesser figure of 100 million jobs, it is likely that only about 25 million people will be needed in the so-called primary and secondary industries – that is, only a fourth of the labor force will man the production-oriented part of the economy. The other three-fourths will be in service industries, some in tertiary services (that is, helping goods-oriented industries) and the rest in quaternary services (doing things judged worth doing for their own sake). It is difficult to estimate productivity in the quaternary activities, particularly in the government sector, and if current trends continue, it could be said that a considerable number of these service workers will simply be receiving disguised subsidies or welfare. That is, the jobs they will be doing will be meaningless in terms of product to society, though they may enjoy doing them; the

*John Maynard Keynes, "Economic Possibilities for Our Grandchildren" (1930), in *Essays in Persuasion* (New York: W. W. Norton, 1973), pp. 365-66, 371-72. Italics added.

jobs will merely be an accepted way of transferring income to such people. The salaries they receive will be counted as part of the GNP, but it will be increasingly difficult, in many cases, to associate this portion of the GNP with any kind of increase in benefit to others.

HOW LIKELY ARE DEMOCRACY AND WORLD GOVERNMENT?

Considering the difficulty of discussing changing values and life-styles, what can be predicted about the political systems that will govern in the next 200 years? This is as difficult to project confidently as is the issue of life-styles and values. Moreover, politics will both influence and be influenced by life-styles. For whatever it is worth, we offer some conjectures.

Many countries will be relatively or at least nominally democratic, though some democracies will probably be more authoritarian than truly parliamentary. The reason is not the universal superiority of either the democratic or authoritarian types of government; rather, it is that an affluent, technological world almost has to be – at least initially – somewhat cosmopolitan, secular, pacifistic, relativistic and perhaps hedonistic.

In deeply religious communities there is a strong tendency for the government to be conducted by a theocracy which in effect speaks to God or mediates His wishes. Heroic cultures are often governed by a great leader, an aristocracy or an oligarchy of talent, wealth or military skill. But secular-humanist cultures are not willing to legitimize any of these types of government. Their method of making a government legitimate is by social contract and the manifest consent of the governed, or by a mandate of history which clearly yields acceptable results to the governed (by their criteria).

This need for legitimization by explicit real, or pro forma, elections applies to both real and pseudo-democracies (such as many of today's "people's republics"), to relatively paternalistic, authoritarian governments (as in southern Europe, Latin America and Southeast Asia), or to a dictatorship more or less maintained by naked force (as frequently found in Africa and to a lesser extent in Latin America). In this respect, authoritarian should not be confused with totalitarian or dictatorial governments. In authoritarian states, there is a comparatively high level of legality and usually some lip service to parliamentary representation, including a need for something like general elections – if only in a validating and public relations role. Particularly if man is to experience a century of relative peace, and no great inflations or depressions, we can plausibly, but not certainly, assume that even more governments will be democratic than at present.

It should be noted that in the last 200 - 300 years stable democratic government developed primarily in what we describe as the Atlantic Protestant cultural area and Switzerland. In all other parts of the world, democracy still seems to be relatively fragile. Clearly, though, it has also attained strength in Israel, France, West Germany and Japan; and to a lesser degree in Italy, Colombia, Venezuela, Singapore, Hong Kong, Costa Rica, Malaysia and perhaps Mexico and the Philippines. But it should be noted that there are almost no other authentic democracies in the other approximately 125 nations of the world. Thus one cannot think of democracy as a movement that clearly dominates other forms of government, particularly if democracy is put under serious strains or if the people and leaders cannot act with a modicum of democratic self-restraint and a firm and informed sense of political and financial responsibility.

It is also likely that there will be many functional organizations which will deal with the various international issues that will arise in the 21st century. Many of the most effective organizations will probably be of an ad hoc nature, but some of them will be part of larger international organizations such as the United Nations.

Many people believe that as more functions are undertaken by international organizations, there will be an almost inevitable growth toward world federal government. But unless the functions are performed with superb efficiency and effectiveness, this kind of evolution by peaceful development rarely proceeds very far without involving considerable violence. It is clear that the requirements of preserving peace and the problems of arms control, the environment and economic relations, as well as many law and order issues, all create great pressures toward peaceful evolution to world federal government. One reason for skepticism arises from thinking about the likely answer of the Japanese, Soviets, Europeans and North Americans to the following questions:

1. Are you willing to turn your lives and interests, and those of your families and communities, over to a government based upon the principle of one man, one vote – that is, to a government dominated by the Chinese and the Indians?

2. Would you be willing to turn your lives and interests over to a government based upon the principle of one state, one vote – that is, to a government largely controlled by the small Latin American, Asian and African nation-states?

Clearly, the answer to these two questions will be a very strong negative, as would also be the reply to a suggestion for a bicameral legislature with two branches organized according to the above two principles. We can imagine a world legislature based upon one dollar, one vote (dominated by the United States and Japan) – or on other realistic, if inadequate, measures of actual power and influence. But it is more difficult to imagine such a government emerging peacefully, or being very strong if it did evolve peacefully. There are many ways to create a political consensus; but none of these methods makes it easy to imagine a real world government evolving by purely peaceful means. ■

The Next 200 Years

By the year 2176, Kahn et al predict, the population of the world will be leveled at 15 billion souls, with a per capita economic activity of $20,000 (world per capita product now is $1500). The book proposes that the leveling off of population and economic growth will be based not on limitations of supply but limitations of demand. People will have enough.

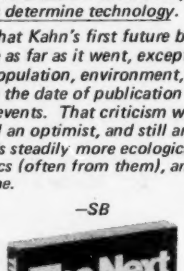
That is diametric news, 180° out from most economic wisdom, which assumes always infinite demand meeting always finite supply. The authors make a persuasive case refuting **The Limits to Growth** *on the continuing availability of materials and energy. And they have paid close attention to the behavior of affluent groups such as the outlaw/citizens of the Counter Culture.*

In other words, they have an adaptive model, the only one I know of. It assumes that people learn. And interestingly it inverts the understandings of Marshall McCluhan, early Herman Kahn, and others who have said the technology determines values. Once the survival basics are covered, they suggest, then increasingly values determine technology.

Paul Ehrlich once commented that Kahn's first future book, **The Year 2000** *(1968), was fine as far as it went, except that it failed to even mention population, environment, or ecology, which practically from the date of publication became major determinants of events. That criticism won't hold for this book. Kahn is still an optimist, and still an economist, but his perspective is steadily more ecological. He's learned more than his critics (often from them), and has more of interest to say to me.*

—SB

The Next 200 Years
(A Scenario for America and the World)
Herman Kahn, William Brown & Leon Martel
1976; 241 pp.
$3.95 postpaid
from:
William Morrow and Co.
Wilmor Warehouse
6 Henderson Dr.
West Caldwell, NJ 07006
or Whole Earth



It is useful to distinguish four kinds of economic activities: primary, secondary, tertiary and quaternary.

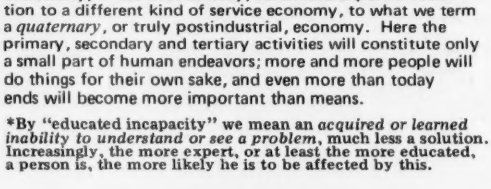
Primary economic activities are extractive – principally agriculture, mining, forestry and fishing. One can think of the corresponding society and culture as being organized to "play games with and against nature" and for protection against "barbarian" invaders and raiders; in such a society the ratio of rural to urban dwellers is in the range of twenty to one, with the former supporting the latter by some kind of primary activity.

Secondary economic activities have to do with construction and manufacturing. The corresponding society and culture, primarily urban, are organized mainly to "play games with and against materials, as well as against nature," and the other major activity tends to be organized warfare, both offensive and defensive.

Initially the emerging postindustrial economy will be characterized by a service economy, emphasizing what are called *tertiary* economic activities – services that support primary and secondary activities, such as transportation, insurance, finance, management, many governmental activities, much education and training. Nature becomes a relatively controllable variable and constraints set by materials become less and less important as technology and affluence increase. This results in a society and culture, probably more suburban than urban, whose major activity is "games with and against organizations," and which is characterized by a structural society which emphasizes organizational and professional pluralism in the distribution of power and prestige. Knowledge rather than experience becomes the major asset and there is an increasing problem of "educated incapacity."* Wars no longer "pay" and the recourse to large-scale organized violence becomes restricted generally to defensive situations or attempts to preserve some aspect of the status quo.

Eventually, in the 21st century, we should expect a transition to a different kind of service economy, to what we term a *quaternary*, or truly postindustrial, economy. Here the primary, secondary and tertiary activities will constitute only a small part of human endeavors; more and more people will do things for their own sake, and even more than today ends will become more important than means.

*By "educated incapacity" we mean an *acquired or learned inability to understand or see a problem*, much less a solution. Increasingly, the more expert, or at least the more educated, a person is, the more likely he is to be affected by this.



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Industries and other groups who had never paid much attention to their impact upon the air and water suddenly found they had to, and could, do so. There has been a growing recognition that air and water are scarce and belong to the public, and that one must pay to use them, just as one pays for raw materials or labor or building space. Moreover, one must operate in ways which protect them. The task ahead is simply to persuade those who use the air and water that they must pay the costs to clean what they have fouled. While it is normally efficient economically to make such payments equal to the costs, it might be better, in principle, to make penalties higher, perhaps twice as high as the actual cost of clean-up, thus not only encouraging steps to prevent fouling in the first place but eliminating any suggestion that the government is going easy on the polluters.

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We would recommend the world-wide creation of a number of public and private institutions with various specific purposes, but all with an overall mission of the systematic and intense study of far-fetched and improbable phenomena, but phenomena which would be extremely important were they to occur. In effect, these institutions would together constitute an articulate lobby and an "early warning system" for long-term environmental problems. It is only fair to warn the public that anyone who studies such phenomena full time is almost certain to exaggerate their likelihood, impact and dangers. To do so is simply human nature. We do want the people making these studies to conduct them with an almost fanatic intensity, since such fanaticism can be very useful in sustaining interest, drive and even creativity. But we do not want this fanaticism to be carried over into judgments on public policy.

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Eight Basically Uncertain Issues

These are the real issues of the future. Their general nature is sometimes clear; the exact shape they will take, the degree of danger and problems involved and their likely resolution are unclear.

1. Effects of U.S. superindustrial economy on environment, society and culture of the U.S. and the world.
2. Effects of U.S. postindustrial economy on environment, society and culture of the U.S. and the world.
3. Parallel developments in other countries.
4. Political, institutional, international-security and arms-control issues.
5. Possible damage to earth because of complicated, complex and subtle ecological and environmental effects.
6. Issues relating to quality of life, attitudes, values, morals and morale for different nations and groups.
7. Images of the future and the likely problems and opportunities created by these images.
8. Degree and effects of bad luck and bad management.

To live simple, think complicated, and attend thy enemy

These mutterings are inspired by two recent personal events – a debate with Herman Kahn, and all the flak I've been getting about space colonies.

The debate – on centralist versus decentralist philosophy at the "Toward Tomorrow Fair" in June at Amherst, Massachusetts – was introduced by its organizer Sharon Francis as likely to be akin to a showdown between bull elks. Everybody braced accordingly, including the debaters. I began by claiming that the best measure of the unhealth of an ecosystem is how centralized it is, and the same goes for human affairs; that locally adaptive systems have the long-term advantage of complex multiple feedbacks and rapid local response to perturbation; that such systems are nearly impossible to analyze or control – or kill. Herman Kahn nodded vigorously.

He then remarked dryly that most of the do-it-yourself, back-to-the-land, countercultural behavior that is nominally based on the need for survival in a time of social breakdown . . . is more probably based on affluence that is large, growing, and likely to continue. The ostensible model for hippies is Native America; the real model is leisured aristocracy. I nodded vigorously.

Instead of elks colliding, the audience had two apes grooming each other. People stood up and challenged the stage. We challenged back. The debate had rotated 90°.*

I liked that. I have not liked some of the mail I've been receiving about Space Colonies since we devoted parts of two issues to describing the scheme and polling bright people we know for comment. Something about Space Colonies stirs either worship or horror. Violent stuff, such as these remarks from Elmer Baldwin, El Centro, California:

> . . . the message I get from all this crap is, "We have developed a huge, ugly technology which put a clown on the moon to read the bible to us. Now, we have to use that technology to move on out to the stars, there to fuckover whatever we can find just as we have done on earth." Space colonies – rot! The mentality that builds such fantasies, that publishes the blitherings of such writers, that mentality is made of the same fetid crap that drove our "forefathers" west to destroy the land and the people of this now "Buysintinnyule" USA. . . . Don't try the old saw about presenting the "balanced view." That is just more of the same old crap that made Western Science the bankrupt cesspool it is now. The balanced view is just another name for nowhereman. . . .

The feeling here (which I occasionally sympathize with) is in some ways identical to the expressions I hear of extravagant support for Space Colonies. They both exclude. No, any statement excludes. They destroy – obliterate the existence of – any other view, any doubt, any interesting news other than another conversion experience, which they are ripe for.

There is a self-loathing loose in America which troubles me primarily because it has infected so much of a balancing group that I hold dear – the Environmental Movement. The central function of Environmentalism, as I get it, is a regulating science – detailed vigilance for social-technological mistakes, especially delayed-effect ones. The public moralizing is derivative from that. If science is made of routine doubt, constant learning, and respect for experience over theory, you'd never guess it from the letters I've got from environmentalists about Space. Instead the burden is, how dare I violate the Party line? And they remind me about the list of Bad Things – Government, Big Companies, Technology, America.

When in doubt around a controversy I tend to lean toward whichever side is in learning mode. The recently rabid L-5 Society – supporters of Space Colonies – has moderated its shrillness, paid attention to its critics, extended its range. Except for Paul Ehrlich, who met and liked Space Colony designer Gerard O'Neill, I've seen nothing equivalent from environmentalists. That's a good way to lose a fight.

I suppose what we're talking about is tolerance for contradiction. Maybe a better term is love of detail.

Adolph Hitler, Albert Speer says, had a habit when he was making up his mind to do something stupid of always giving himself just two choices. Since usually both were crazy, his decisions reflected the method of his madness. Such dividing of the universe into either/or is brutal thinking. Either Herman Kahn or Ivan Illich. Either Space Colonies or butterchurns. Either the CIA is good or it is evil. Try both. In each of those, the more one the more the other. (A short history of the CIA: the more it is good the more it is evil. A short explanation of its technique: the more it is evil the more it is good.)

One meaning of "simple" is "ignorant." Big simple opinions require the ignoring of detail, require suppressing local selectivity. (Hm – within the bad big thing here's an excellent little thing, better than we have over at my big good thing.) Micro-critics make lousy prophets.

The sheer power of conversion personalities is dramatic and valuable – Ram Dass, Dan Ellsberg, Jerry Rubin. But I think they're matched for drama and value by the steady lovers of contradiction – Tom Wolfe, Jerry Brown, Abbie Hoffman, who liven their days doubting their friends and flirting with enemies.

*It is said that the Fox knows Many Things but the Hedgehog knows One Big Thing. What if those knowledges are of different logical type – they seem to contradict but actually include each other? The more you know Many Things the more you know your One Big Thing – whatever is your version of "eternity in love with the productions of time."***

Love any enemy who knows something you don't – which any enemy does, by definition.

–SB

* I know, I know. The same Herman Kahn who was party to the appalling scheme to flood the Amazon Basin.

** William Blake, "Proverbs of Hell."

The Shift from a Market Economy to a Household Economy

Return of the yeoman. Intermediation fades.
No one has noticed.

BY SCOTT BURNS

My subject is the shift from a market economy to a household economy. Before getting into that topic I would like to tell you how I got concerned with it.

About seven years ago, I started writing a book that was to be a conceptual primer on personal economics explaining how one financed a lifetime. In the course of writing that book I built some mathematical models to answer a question we all inevitably face: at some point in our lives we are no longer productive of income and must retire. Is it possible? At what rate do we have to save and what return do we have to get on those savings in order to replace our earning power?

What I discovered scared me quite a bit. I put these graphs up because they demonstrate what was in the first book. If you make a track of a savings rate, of someone taking a portion of their income and investing it at various percentages each year, starting at age twenty-five or thirty or thirty-five, and ask will that invested money replace fifty percent of their earning power at retirement you come out with a disaster. About 80% of the population is far under the curve. They don't save enough or get a high enough return on their savings.

Scott Burns lives in the grip of an unusually dry humor which often expresses itself in appalling statistical anecdotes delivered deadpan. He finds appalling statistics because he investigates where economists fear to tread – the wilderness of non-monetary exchange. Years ago someone named Fleshfeather asked The Whole Earth Catalog, "What is postmonetary economy?" Scott Burns has some answers. And they are not only news, they are surprisingly good news.

This article was edited by Burns from a talk he gave at the Lindisfarne Fellows meeting on Long Island this spring. Cassettes of the talk are available for $6.50 from Lindisfarne Association, Box 1395, Southampton, NY 11968.

Scott Burns' book on the subject, **Home, Inc.**, *is reviewed at the end of this article.*

–SB

These curves, by the way, were predicated on the assumption of a 2% inflation. At 5 or 6% inflation virtually no one saves enough.

After that I got very impatient with what I had learned of economics. I decided to redefine it in a rather Robinson Crusoe way. What do we need in calories to get through a day? What multiple of that do we need to support some reasonable biological entity, a family that reproduces and goes through those events that, if not inevitable for all of us, at least must be done by the majority of the species if the species is to continue. How can we talk about economics not as "the allocation of scarce resources" the way economists talk about it, but as the creation of value? Where do we create value? How do we create value? And how is it measured?

If we just talk about money we see that the system we have now isn't working very well for most people. There is no way that you can say that the majority of the people are slackers, ne'er-do-wells and so forth, and yet most people retire to one form or another of poverty.

In lieu of having accumulated adequate private savings we have a system called Social Security. This is an illusion and it is an example of creating what I call a meta-stable system. We write a contract, often called a "compact between generations," and at the moment that compact, the Social Security system, has liabilities equal to the total net worth of the entire nation. If any of you would like to pursue that idea the January 1976 issue of **Playboy** had an article of mine on the subject. The long and short of it is that instead of dealing with the adequacy of individual saving or family saving we created a national system of artificial security that actually works to further depress real saving.

What we have done, faced with the failure to operate on the closed and reasonable basis of an individual or family, is to start substituting things that don't work but don't collapse until sometime in the future. We have done this in corporate pension plans and we have done it in public pension plans. We're also doing it with natural resources and the planet in general.

Dan O'Neill

THE $212,000,000,000 WORKER —

My question is this: how can we rearrange our affairs so we can recognize true value? And how do we get there?

If we take a look at history we can follow a series of events. The market system was defined in 1776 by Adam Smith. Beginning around 1830 or 1840, the decade usually defined as the "take off point" for Western society in general and America in particular, there was a period of incorporation paralleled by enormous industrial growth. The period of incorporation climaxed between 1880 and 1910. It culminated in 1901 when United States Steel was founded: some 5300 separate manufacturing plants combined in 318 trusts with seven billion dollars of capital, became U.S. Steel Corp.

That began something that might be called the age of intermediation – a period in which we put more and more between individuals and their livelihoods.

First we built larger corporations. The corporations grew on what you might call a fiduciary basis, that is the need to invest the capital that was produced, to constantly reinvest the surplus, not necessarily on the basis of economies of production. Mr. Kroc could have stopped at one McDonald's stand but because the first McDonald's stand was so profitable he kept going.

There was also a second stage beyond creating corporations which was the formation of super-numerary institutions – mutual funds, insurance companies, bank trust companies, and so forth. These were further steps of intermediation between people and the actual economic process of living. During the same period the political debate was between collectivisation and individuation, between people pursuing their own economic goals as single mindedly as they could and acquiring (and keeping) great wealth and wide ownership of the means of production irrespective of who engendered its creation.

What was overlooked in that entire period is that there was another economy – not the collective economy which we have, and not the private economy, but the *economy of households* which had been totally eclipsed by the industrial revolution.

[more →]

That "takeoff" decade of the 1830's was the beginning of the demise of the productive household. It was the beginning of the end of Jefferson's dream of a land of yeoman farmers who were beholden to no one, who were free and independent, and neither possessed by some collective group or by those who control capital.

I would like to talk to you about the size of this household economy, how one finds what size it is, how important it is, and what it means for our future.

The household economy is approximately a third to a half the size (when converted into dollar measures) of the conventionally measured economy. It mobilizes an enormous amount of labor. I went through a whole series of studies that had been done on the time value of labor within the household. I deliberately picked the more conservative ones. Many of you have probably heard of the Chase Manhattan Study which said that the value of women's work in the home was worth thirteen thousand six hundred dollars in 1970. Divorce lawyers just love that one. But other more conservative studies that have been based on long term diaries kept on the allocation of time and chores indicate that the total value of work done within the family was about two hundred and twelve billion dollars in 1968. You can adjust for inflation by adding about two thirds to that. This compares (in the same year) to total corporate wages of three hundred and twenty billion dollars.

We might also consider the value of work done by all women within the household – some 155 billion dollars. That is more than all the wages paid out by all the manufacturing corporations in the United States in the same year. Or we might consider that the value of women who did not work outside the home in the same year (basically young mothers) was 124 billion dollars: this is more than the 96 billion in wages paid out to all the employees of Federal, state and local governments in the same year. So the household mobilizes an incredible amount of labor. I haven't included all the volunteer labor, or other labor that is ignored because it does not involve the passage of cash.

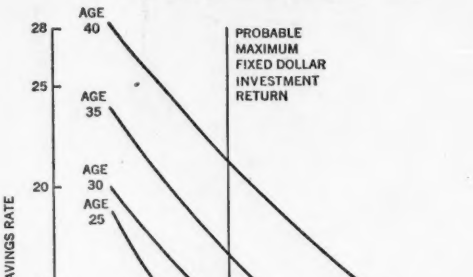
Another source of household income is the income from home capital. How much capital does the household have? What return does it get? When you look at that you discover what is called imputed income. A family has imputed income from things it owns; for example, if some people own a house and they have a certain amount invested in it and owe the rest to a banker. The return they could achieve on their equity is their imputed income. If you figure a return of 6% the total imputed income in home ownership is more than 30 billion – more than all the dividends paid by all the corporations in the United States. The returns on consumer capital in total are approximately equal to the profits of all the corporations in the United States after taxes. If you look at the figures a little further you discover something else that is extraordinary.

However much we talk about a corporate economy it is a fact that since 1929 the share of the actual,

Family of Curves Representing Savings Rates and Returns Required to Replace 50% of Income at Retirement, Assuming Different Starting Ages in a 2% Inflation Environment and an Annuity Withdrawal Rate of 8%

NET RETURN ON INVESTMENT	AGE AT BEGINNING OF PROGRAM 25	30	35	40
3	17.8	20.0	23.8	27.8
4	14.3	16.6	20.0	25.0
5	11.0	13.5	16.6	21.8
6	8.8	10.8	13.9	18.5
7	6.8	8.8	11.6	16.1
8	5.2	7.0	9.6	13.5
9	3.9	5.6	8.1	11.9

SAVINGS REQUIRED AS % OF INCOME



Source: *Squeeze it Till The Eagle Grins*, S. Burns, Doubleday, 1972.

tangible, physical wealth of the country that is owned, controlled, and used by households has been expanding while the corporate share has been diminishing. It is true that the share the one hundred largest corporations have of all corporate assets has been expanding. But not of total wealth. There, the household share has been increasing.

We have some problems with this because a lot of people question the value of the capital that has been accumulated. One of the major items there is the automobile, and you know we certainly have a lot of misgivings about automobiles. But the thing to observe here – and I will get into some truly productive consumer capital in a moment – is the capacity of this particular kind of institution, the household, as opposed to collective organization, or market organization, to accumulate goods that it uses.

Right now everything we measure only accounts for passages of money. So the household does not exist except when it is deficient. We include 5 billion dollars of welfare aid to families with dependent children in the gross national product and that money only exists because certain families could not exist.

Dan O'Neill

Successful families are not credited by economists yet their absence would result in absolute chaos and misery.

I did some analyses of things that people could buy for themselves and compared them with the market economy. One that became very popular in 1973 was the storm window. Its return on investment in that year was 30% because of the fuel savings involved. That return is higher than the return of capital achieved by all but six of the Fortune One Thousand corporations! I might add that while we talk about an energy crisis, and while the government spends money on ERDA to do coal gasification and a lot of other projects, one might ask about the potential for conservation in the household. If you took the potential energy to be saved just by insulating houses – existing, conventional houses – and you only required that the home owner get a return on investment equal to that achieved by average corporations, America's families would be able to invest an amount equal to all the money spent on residential construction in 1973! That was the last year any contractor ate and a pretty good year for housing.

I joked at breakfast about a column I wrote on the "yogurting of America" in which I did an investment analysis of the Salton yogurt maker. That little piece of equipment produces a return that is absolutely phenomenal. To replace that $12.00 machine with the effective income it produces you would need between $300 and $500, depending on the investment media you chose!

About a month ago I did an analysis of the flour mills that are available and I picked one of the more expensive ones because I did not want to be involved in labor. I looked at the per capita consumption of flour, figured out the flour consumption of the average family, and what resulted from buying a $140 flour mill is this fact: if you mill enough flour to bake five loaves of bread a week your return on investment, assuming a ten year life on a flour mill (they are expected to last much longer), is equal to that achieved by the Pillsbury corporation. That's a pretty good investment. If you grind all the wheat you consume, the return on investment is 40%! Now that's pretty good!

So while the household may not have invested its money terribly wisely in the past it is very clear that there is a great deal of room for good household investment. It's also clear the household can reduce its consumption, and reduce the cash income that it needs in order to survive.

One of the impediments, other than habits of thought, that has been in the way of a growing household economy, is that it has no economic incentives. We have constructed a system of depreciation and in investment tax credits for corporations that the household does not have. Corporations can recover their capital investments, households cannot. In 1974 when corporations could deduct their investments in energy-saving insulation and so forth, home owners were being asked to insulate their houses while they paid an oil bill that was twice as large. This is very hard to do, particularly when your food bill went up 20% in the same year. If we had legislation that treated the household as a business entity, as something that created value, and employed depreciable capital in its operation, we might see a very dramatic change in how we organize our society.

I submit to you that we would probably have more innovation in a shorter priod of time than we will have through government or corporate supported research.

There are limitations to the household. And they are very real. The household economy is never going to replace the market economy altogether. Nor could it replace the collective economy altogether. The thesis of **Home, Inc.**, is that we are witnessing a shift; that over the past two hundred years we have seen the incredible growth of the market economy and its deplacement of the household economy. That process is reversing.

Let me just give you one example of one kind of event that might occur. We have doubled our population every forty or fifty years. This implies that every generation has to build its own shelter. In addition, the fact that we double our population in less than a life span means we inflate the value of land underlying structures. Very often a building is removed long before it has outlived its economic life span because of the value of the land underneath it. Now imagine what happens as this population starts to level. We no longer have to build a new stock of housing for each generation! One can actually pass on an entire store of shelter capital. Right now the housing stock in this country is worth approximately the value of all the corporations in the United States. It is conceivable that my children may be the last generation to know what a mortgage is except for purposes of renovation and renewal!

[more →]

One of the issues we have to face is how we organize ourselves to make certain that the capital we have in place and the new capital that we put in place (in terms of shelter) is the capital we want. I left Arthur D. Little in 1971 while witnessing an incredible event of intellectual bankruptcy. I had spent six months in 1970 trying to sell the idea that maybe we should do an energy sensitivity analysis of the housing sector and we might be able to save a little oil. It was an unfashionable idea at the time. The idea was to examine things like siting, what the FHA could do to influence insulation standards, and that kind of thing. I couldn't sell the idea!

I pointed out that when you put up a house the thing stays there. You can build a car and throw it away in seven or eight years. You can build an airplane and throw it away in twelve years. But a house and its habits of energy consumption are around for a long time. Alas, no one in government was interested until 1973.

A little later we were doing an examination of inter-city transportation and the government was spending a quarter of a million dollars to study all kinds of high technology methods of getting from one city to another. Nobody had looked at the fact that 85% of all inter-city transportation was by automobile and that the annual growth rate in automotive transportation was equal to the total capacity of non-automotive transportation, so there was no way to accommodate a shift. Talking about different technologies for transportation was irrelevant. What we needed was a mechanism to get the Department of Transportation to deal with the automobile as a cultural artifact.

I am not sure how one does that. Because I am not sure I have become a fatalist.

I am hoping that our economy will change by some brute economic forces – not by government action, think tank studies or academic recommendations on public policy.

I will list these brute forces for you.

One force behind the growth of the household is the instability of the market economy. In periods of instability the desire for independence and withdrawal from the market comes to the fore. It did so in 1905. It did so during the Great Depression. And it is doing so now. One does not have to be in the Harry Brown school to want greater security. (My wife and I, by the way, have been thinking about writing a joke book called **How to Make a Killing at the Second Coming.**)

The other mechanism of change is the force of inflation. As the medium of exchange is degraded, our desire to participate in exchange diminishes. We have more and more reasons to escape from exchange. Because of increases in food prices, 47% of all the families in the United States had a small vegetable garden in 1974. Even the Burns family had a two-car garden. (That's how I measured the size.) It

Wendy Burns

Scott Burns

didn't produce an awful lot and I am not going to say that the Burns family could have sustained itself on that or even a four-car garden. But it is interesting that half the families in the country did something to move away from an exchange economy.

Another force is taxation. We have built an enormously complicated economy and society. The cost of organizing and maintaining that society, as Oliver Holmes noted, is the cost of taxation. Taxation, however necessary, reduces our incentives to produce because it takes away the rewards of productivity.

Sounds very conservative, doesn't it? But it is true that if we are removed we have no taxes. Since we have ever more taxes we have more reasons to do more for ourselves all the time. For instance, 60% of all wallpaper put up is put up by individuals. And 80% of all paint. Centers for home improvements are growing at 20% a year. Magazines like **Organic Gardening** have done surveys and found that their readers have incredible machine shops. I don't know what the returns on those machine shops are, but the capital equipment is in place.

Another force is productivity. The logical conclusion is that more and more invested capital stands between the producer and the consumer. So all the things that bother us like the alienated zombies at supermarket check out counters or at Bradley's, Zayers or Korvette's – all those alienated people who shop there and who work within, are the victims of an ever growing body of capital. One has to have more sales per square foot per year. That is the name of the game. In manufacturing we have the same situation. More and more investment per worker. Always removing the worker further from the process of production. So the process of work gets less and less attractive.

Finally, there is technology itself. I haven't read anything which answered to my satisfaction which came first, big capital or big technology. Some

research has been done, but not enough of it. I would like to see more done on how much capital is required to be in a business. One man, a friend named Barry Stein, found that 70% of all consumer products could be produced with a capital investment of no more than a million dollars for a market area of one million people. That is very different than the market area covered by General Motors. Or Proctor and Gamble. Or Pillsbury. Or any other major corporation. Technology is bringing down the size of organization. That means we may be able to organize on a much smaller basis. A very decentralized basis. This would produce some very positive effects.

I like to think of this as moving toward a mosaic society – not a meta-stable society like a society with social security and things that can collapse – but a society with room for individual failures and individual successes. In our present society we no longer can afford failure. That is why we are so preoccupied with it. We cannot afford to have Lockheed fail. We cannot afford to have any number of companies fail because they employ too many people. If they were smaller they could live or die and not effect all of us.

The process of change would be less hazardous. One of the problems I have encountered with **Home, Inc.**, is that the idea in it is not very esoteric. I now have a phrase for this problem: I have been expounding "conventional chic," a love of family and the mundane, and the earthly as opposed to the transcendental.

An article in the April 1976 issue of **Harpers** by Michael Novak, "The family out of favor," has a marvelous statement: "Clearly the family is the seed bed of economic skills, money habits, attitudes toward work, and the arts of financial independence. The family is a stronger agency of educational success than the school. The family is a stronger teacher of the religious imagination than the church. Political and social planning in a wise social order begins with the axiom: What strengthens the family, strengthens society." One of the curious things about making a statement like that, aside from the fact that it is utterly unfashionable, is that you get attacked from both the left and the right. And that is one of the reasons that I think it must have something going for it.

Senator Mondale once put forward a bill for a Family Impact Statement. He had people on the Left after him because they wanted to support Federally funded day care and they thought he was attacking day care; and he had the John Birchers after him because his bill somehow upset their idea of the natural order. I don't know how one deals with that. I am hoping that the patent bankruptcy of where we are now will make itself apparent to more and more people. The reason I talk about the household economy as something that is hopeful is that I am looking for an alternative to the two reincarnations of Mercantilism with which we are now living. On the liberal side one sees a group of technocrats and experts who are going to tell us how we are going to live, particularly those who are less fortunate. On the conservative side we have another elite about to tell us that those who possess large amounts of capital have pre-emptive status and pre-emptive power and that we should do our work and not question things. In the end, both are statists and produce even greater bureaucratization. I don't find either idea very acceptable.

"Ask not what your country can do for you, do it yourself."

– Larry White
Pacific Sun

If you will excuse the pun, I have a very homely view of things. Maybe it is Right Livelihood. The most important thing in my life has been that I have a family I love, that I am loved, and that I find some way I can nurture and sustain that "project." That is the origin of most everything that I have thought about.

There is one other question and then I will be quiet. What is the mechanism of change? How do we do all this? I don't think there is a mechanism of change. I don't think there is a prophet for it. I think we have something on our side called demography. An incredible accident of fate. I wrote a newspaper column called "The Casualties of Demography" and discussed the number of people turning twenty-one each year. I also pointed out that the orthodox economy is structured so that over the next ten years the very industries that need the most money are the ones that provide the least amount of employment per dollar of capital invested. So we have a whole generation of employment casualties. They are going to be forced into exploring the household economy and non-money economy. I haven't been to California recently but a friend of mine reports that about 15% of the young people are involved in some kind of cottage industry. They don't seem to be employed in orthodox business.

We have created an enormous body of human capital via higher education and failed to create the industrial infrastructure for its employment. This will be the roots of transformation, not anything as ephemeral as "Consciousness III." What we did in the sixties was to make an incredible over-investment in human capital. We opened up colleges in the late sixties at a rate of one a week. That is not quite up to the McDonald's standard but it's right up there with Pizza Hut and some of the better franchises. These people are now out on the job market unable to find orthodox employment. Their entire experience of life is very different from mine because if you came of age since 1970 your experience of life has been one of economic disintegration – not only from the government sector but from the private sector.

And that, ironically, is where I find hope. In adversity – four million new experimenters every year, working for a new and homely society. ■

Home, Inc.

If Scott Burns has piqued your interest in the preceeding pages, you'll be glad to know there's considerably more where that came from. His book examines the much larger economic and non-economic picture in which the household is a growth industry, and he does some fearless detailed predicting. What is interesting to me is how compatible are Scott Burns and Herman Kahn, coming from opposite directions and arriving at related optimistic visions of a peaceful time, micro-adaptive. **Home, Inc.** *has not been a hot book. It may be a sleeper like* **Small Is Beautiful** *if Burns' insights continue to be verified by events.*

—SB

Home, Inc.
(The Hidden Wealth and Power of the American Household)
Scott Burns
1975; 252 pp.
$6.95 postpaid
from:
Doubleday & Co., Inc.
501 Franklin Ave.
Garden City, L.I., NY 11530
or Whole Earth

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The American economic "take-off": the rise of the industrial system and the consequent decline of the household economy.

8. Critics of the Market, Defenders of the Household

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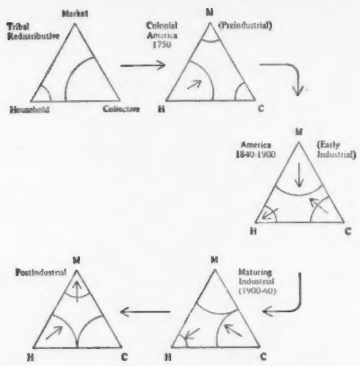
The Changing Dominance in the Economic Triad



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17. Technology Comes Home

The technological counterwave and the rise of convenience. Problems with scale; the necessity of local production. How the market is becoming a subcontractor to the producing household. Borsodi's "institutional burden."

Part Four AN EXPEDITION IN THE CURRENT MYTHOLOGY

18. The Narcissistic Vision

The limits of academia and the professional society. The aging of the new industrial state; its irrelevance to the future. The facts and figures of employment growth; the decline of corporate America.

Epilogue UN-MONEY

The making of a non-economic society, and a final note on the irrelevance of money.

Homage to Dasmann

Environmentally over-info'd out? I mean, as a nouveau-conservationist, I combed the WHOLE EARTH CATALOG and was inundated by texts like **Man's Impact on the Global Environment** *and* **Biology and the Future of Man.** *Later, thinking myself hipper, I read the academics (Jack Bressler's* **Human Ecology** *and* **Environment, Power and Society** *by Odum – CATALOG, p. 8). Finally, between stodgey prose and futuristic modeling, the GLUT STRUCK.*

I'd pretty much stopped reading. Just skimmed: field guides, "ecology" articles, and **CQ** *review books. THEN* **Environmental Conservation:**

> *– The ease of History. The old-fashioned insistence that we try to remember what was and learn by it. Carl Sauer. Lewis Mumford. Edgar Anderson. Now Dasmann's Fourth Edition of* **Environmental Conservation** *(the first was seventeen years ago - 1959).*
>
> *–The thorough, intimate prose. Every "idea" is not an "idea," because it takes place in a habitat, in a town or desert, with humans trying but stumbling because their present desires have made them careless about mañana.*
>
> *– The quiet passion. Never trying to say more than the "everyday" reality can hold. Simultaneously yearning for humans to change and to see and to gain loving guidance for the Planet.*

To save wood pulp and forests, I hereby erase all recent college textbooks except Dasmann's **Environmental Conservation** *and its predecessor* **Man's Role in Changing the Face of the Earth** *(CATALOG, p. 17) and its pictorial cousin* **Man and the Earth's Ecosystems** *(summer '76* **CQ**, *p. 53). A heavy trio: HUMANS, EARTH and TIME.*

–Peter Warshall

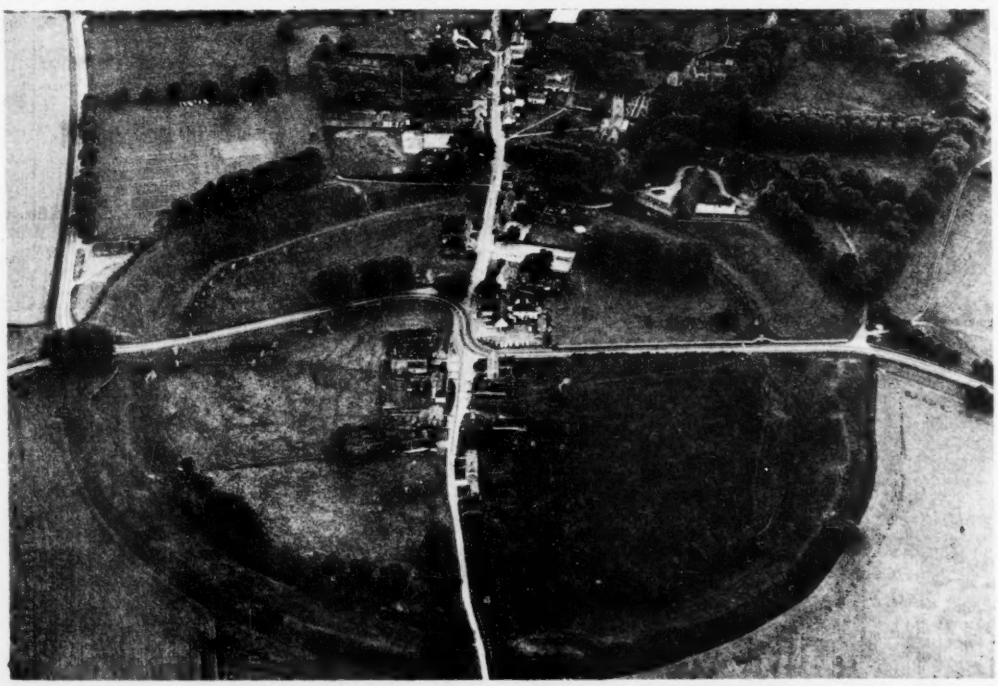
Environmental Conservation
Raymond F. Dasmann
1959, 1976
(4th edition); 436 pp.
$7.95 postpaid
from:
John Wiley & Sons, Inc.
One Wiley Drive
Somerset, NJ 08873
or Whole Earth

If the list of wildlife species now extinct or threatened with extinction is examined, it will be found that a high percentage of these species are like the mountain caribou. They are wilderness animals, dependent on the maintenance of climax or near-climax habitat conditions. The now-rare fur bearers of the United States, the marten, wolverine, and fisher, appear to be among these forms. They are now scarce in most areas of their former range, despite almost complete protection from hunting or trapping. . . .

The species of wildlife that form the bulk of our huntable game populations and those which have become pests of farmlands, forest lands, and rangelands are the successional forms. They have been favored by our use, and misuse, of the land and have exercised their biotic potentials in expanding into newly created habitats left by fire, loggers, or excessive numbers of sheep and cattle.

•

One of the characteristics of the human animal is a wide range of environmental tolerance, the ability to continue to exist under conditions from which most species would flee. . . . A few other species – rats, mice, starlings, pigeons – seem able to tolerate the conditions under which people live, and they accompany mankind around the world. Fleas, lice, and house flies also qualify. This human trait, however, seems to be one which would actually permit people to destroy the biosphere.



PEOPLE AND LAND: REGAINING THE BALANCE *Around the ancient neolithic rock circle at Avebury, England, a diversified pattern of field and village has persisted over centuries.*

Future Primitive

Ecosystem People *versus* Biosphere People

BY RAYMOND DASMANN

Those who have grown up in Europe or North America, and have assimilated the view of history proclaimed in those civilizations, know that once there was a paradise on earth and it was called the South Pacific. For more than two centuries, adherents of western technological culture have been fleeing from the supposed benefits of their culture in search of that paradise or its remnants. The more they have searched, the farther it has receded from their vision. Finally, in desperation, they have attempted to recreate it in the tourist lands of Hawaii or Tahiti. But the new model has not been pleasing to the soul.

Raymond Dasmann has long had a powerful, quiet influence on the environmental movement. Only lately is his name coming to match his impact. An ecologist and biogeographer, he has researched and taught at Humboldt State College, National Museum of Rhodesia, University of California at Berkeley, Conservation Foundation, and, since 1970 he is senior ecologist at the International Union for the Conservation of Nature, at Morges, Switzerland.

Dasmann's books include: **Pacific Coastal Wildlife, Environmental Conservation** *(now in its fourth edition, reviewed on preceding page),* **African Game Ranching, Last Horizon, Wildlife Biology, A Different Kind of Country, No Further Retreat, Planet in Peril, Ecological Principles for Economic Development,** *and* **The Conservation Alternative.**

This article was a paper given at the South Pacific Conference on National Parks in New Zealand, February 1975. It first appeared in the June 1976 Ecologist, *($12/year from: 73 Molesworth St., Wadebridge, Cornwall PL27 7DS England).*

–SB

THE SEARCH FOR PARADISE

More than a century ago, the European invaders of North America were pushing into what they called the wilderness of the West. Most were concerned only with the problems and perils of each day, but a few could see the realities about them with a vision that transcended the purely utilitarian. George Catlin, the artist, was one of these who was greatly disturbed by the destruction of the North American bison and its consequences for the future of the Plains Indian people. He had a proposal that he hoped might save both wildlife and people:

> And what a splendid contemplation too, when one . . . imagines them as they might in the future be seen . . . preserved in their pristine beauty and wildness, in a *magnificent park*, where the world could see for ages to come, the native Indian in his classic attire, galloping his wild horse, with sinewy bow, and shield and lance, amid the fleeting herds of elks and buffaloes. What a beautiful and thrilling specimen for America to preserve and hold up to the view of her refined citizens and the world, in future ages! A *nation's Park*, containing man and beast, in all the wild and freshness of their nature's beauty! (Nash, 1968).

This proposal made in 1832 is commonly regarded as being the first request that a large area of wild America be set aside as a national park. Let us ignore for the moment the obvious chauvinism, since this characterized most 19th century Europeans. Catlin's was no modest proposal, for he wanted the entire Great Plains from Mexico to Canada set aside for the protection and use of those people and animals to whom it rightfully belonged.

At the time there was no receptive audience. The West was being won by those to whom, in Catlin's

A George Catlin painting of wild Comanches and wild horses in Wyoming when it was still governed by Ecosystem People.

words "*power* is *right* and *voracity* a *virtue*." Viewed from the other side, however, the howling wilderness that these narrow men were trying to subdue looked quite different. In the words of Chief Standing Bear of the Oglala Sioux Indians (McLuhan, 1971):

> We did not think of the great open plains, the beautiful rolling hills, and winding streams with tangled growth as 'wild'. Only to the white man was nature a 'wilderness' and only to him was the land 'infested' with 'wild' animals and 'savage' people. To us it was tame. Earth was bountiful and we were surrounded with the blessings of the Great Mystery. Not until the hairy man from the east came and with brutal frenzy heaped injustices upon us and the families we loved was it 'wild' for us. When the very animals of the forest began fleeing from his approach, then it was for us the 'Wild West' began.

THE NATIONAL PARKS MOVEMENT

Forty years after Catlin's time, in 1872, the Congress of the United States proclaimed the world's first national park in the Yellowstone region of the territory of Wyoming. Eighteen years after that, shortly after Christmas in 1890, the Army of the United States surrounded and massacred most of the last independent band of the Sioux Indians at a place called Wounded Knee in South Dakota. A survivor, Black Elk, stated:

> . . . something else died there in the bloody mud, and was buried in the blizzard. A people's dream died there. It was a beautiful dream . . . the nation's hoop is broken and scattered. There is no center any longer, and the sacred tree is dead (Brown, 1971).

Later, half of Catlin's dream was realized. The animals were given the first national park. The Indians had a different appointment with destiny.

The national park movement, started at Yellowstone, has been generally regarded as a great success. When many of us met at Grand Teton and Yellowstone, in 1972, we noted that there were more than 1200 national parks or their equivalents throughout the world that met the high standards of the United Nations' List (IUCN, 1974). The centennial of the national parks movement was a stirring occasion for those of us who favour conservation. But I wonder how many noted that in the following year, 1973, a band of Oglala Sioux and other Indians seized and held the town of Wounded Knee, South Dakota, for many months, in a dramatic protest against treaty violations. They were asking, among other things, that the lands that had been guaranteed to them by solemn treaties with the United States government, be in fact given back to them. Some of these lands are in national parks (Burnette and Koster, 1974).

These things are mentioned because I believe that this is a good time to re-examine the entire concept of national parks and all equivalent protected areas. To begin with, those who were responsible for the creation of the system of protected areas in the United States, including national parks, national forests, wildlife refuges and many other categories, were attempting to establish buffers against the greed and rapacity of their fellow citizens. In the 1850s Henry David Thoreau had proclaimed the necessity for protecting at least some areas in which nature could remain intact against the destructive forces of civilization. In the 1860s George Perkins Marsh wrote about the devastation being created by deforestation and the misuse of lands (Nash, 1968). During the decades before Yellowstone was set aside, and until the first national forests were reserved in the 1890s, it was not only the Indians who were being massacred. In the 1860s, because of heavy use

Don Ryan

Source: *United Nations List of National Parks and Equivalent Reserves, 2nd ed.* International Union for the Conservation of Nature and Natural Resources (IUCN), Brussels: HAYEZ, 1971.

Distribution of national parks in the world. There are 1200 total, not all indicated here. Compare this map with the one of World Biogeographical Provinces on p. 34. Many provinces have no park.

by domestic grazing animals, virtually the entire native grassland area of California was knocked out, and the grasslands that developed in its place were dominated by exotics from Europe and Asia. A good share of the hardwood forests of eastern America had been cut down and similar destruction was starting in the West. Farming lands, particularly in the American South, were misused and abandoned in an eroded, infertile state. Wildlife was being slaughtered everywhere.

It is little wonder that those concerned with conservation of nature attempted to set some areas aside, and it is remarkable that they were as successful as they were in doing so. But is there not cause to wonder that it was accepted that those lands outside the national parks were going to be beaten and battered, or used in such a way that any hope for the survival of wildlife in their vicinity was to be considered an idle dream? Is it not strange that it was taken for granted that people and nature were somehow incompatible, and that the drive for profit or power must take precedence over any concern for the kind of world in which people live? People were not always that way. Perhaps it would be well to listen once more to Chief Standing Bear of the Oglala Sioux (known in his day as the Lakotas) (McLuhan, 1971):

> Kinship with all creatures of the earth, sky and water was a real and active principle. For the animal and bird world there existed a brotherly feeling that kept the Lakota safe among them and so close did some of the Lakotas come to their feathered and furred friends that in true brotherhood they spoke a common tongue.
>
> The old Lakota was wise. He knew that man's heart away from nature becomes hard; he knew that lack of respect for growing, living things soon led to lack of respect for humans too. So he kept his youth close to its softening influence.

Here in the Pacific, if one is to judge from the writings of the early European visitors and invaders, much of the same attitude toward nature must have prevailed. Sir Joseph Banks, who accompanied Captain Cook in his explorations of the Pacific, grew quite ecstatic about the ways of life of the island people and the balance that existed between humanity and the natural world. All who visited the islands before the traders, the raiders, and the missionaries did their evil work, seemed to share that opinion. Among the Australian aboriginal people was a sense of responsibility that was continually renewed by the visions of Dreamtime through which people were restored to unity with heaven and earth (Meggitt, 1974).

ECOSYSTEM PEOPLE vs BIOSPHERE PEOPLE

In an earlier paper (Dasmann, 1974), I have postulated that there are two types of people in the world, *ecosystem people* and *biosphere people*. In the former category are all of the members of indigenous traditional cultures and some who have seceded from, or have been pushed out of, technological society;

in the latter are those who are tied in with the global technological civilization. Ecosystem people live within a single ecosystem, or at most two or three adjacent and closely related ecosystems. They are dependent upon that ecosystem for their survival. If they persistently violate its ecological rules, they must necessarily perish. Thus a hunting people who continually kill more wild game than can be produced by the normal reproduction of wild animal populations must run out of food and starve. A fishing people who persist in overfishing will destroy their base of support. Those who practice subsistence agriculture must develop some means for keeping the soil in place and for restoring its fertility. Island people have lived under particularly strong restraints, and could not tolerate any great increase in their own numbers, since the resources of islands are not only limited but tend to make their limitations obvious. Only continental people can develop myths of unlimited resources.

Biosphere people draw their support, not from the resources of any one ecosystem, but from the entire biosphere. Any large modern city is the focus for a network of transportation and communication that reaches throughout the globe – drawing perhaps beef from Argentina, lamb from New Zealand, wheat from Canada, tea from Ceylon, coffee from Brazil, herring from the North Atlantic, and so on. Local catastrophes that would wipe out people dependent on a single ecosystem may create only minor perturbations among the biosphere people, since they can simply draw more heavily on a different ecosystem. Consequently, biosphere people can exert incredible pressure upon an ecosystem that they wish to exploit, and create great devastation – something that would be impossible or unthinkable for people who were dependent upon that particular ecosystem. The impact of biosphere people upon ecosystem people has usually been destructive. Even if the intentions of the biosphere invaders are the best, and they seldom are, their effect is to break down the local constraints, the traditional practices that have held the delicate balances between humanity and nature, and thus allow ecosystem destruction to take place.

INDIGENOUS SOCIETIES DISPLACED

Here in the Pacific we see some glaring examples of what happens when ecosystem peoples are brought into the biosphere network. The people of Nauru would never have thought of mining their island out from under themselves, until they were tied into the trade and transportation of the biosphere network. The same applies to other phosphate islands. No ecosystem person would have thought of taking the top off New Caledonia to get at the nickel, until he was sucked into the biosphere network. In Australia there is an enormous uranium deposit, an estimated 1 per cent of the world's known supply, on aboriginal land at a place called Gabo Djang. According to Robert Allen, this is known to the Aborigines as the Dreaming Place of the Green Ant, and if it is desecrated, the Great Green Ant, one of the powerful spirits, will come down and ravage the world. Queensland Mines Limited offered the Aborigines the munificent sum of $7,425 in 1971 for the right to mine this 300-million-dollar ore supply, but later raised the offer to $891,000 along with more than 13 million dollars in royalties. The offer was for a long time refused, but in December 1974 it was reported that the people had agreed to sell. The biosphere people have again triumphed and that much more uranium will be turned loose to do the work of the Great Green Ant in ravaging the world (Allen, 1974). Admittedly, some of the ecosystem people who sell out to the biosphere network become very rich, which permits them to go somewhere else to live – *so long as there is a somewhere else that the biosphere people have not destroyed.*

Biosphere people *create* national parks. Ecosystem people have *always* lived in the equivalent of a national park. It is the kind of country that ecosystem people have always protected that biosphere people want to have formally reserved and safeguarded. But, of course, first the ecosystem people must be removed – or at least that has been the prevailing custom. The consequences are almost always destructive to the people affected. Colin Turnbull's book **The Mountain People** is a particularly disturbing account of what happened to a hunting-subsistence-agriculture people when they were pushed out of Uganda's Kidepo Valley National Park (Turnbull, 1972). A similar, but perhaps less severe, disintegration took place among the elephant-hunting Waliangulu who were displaced by Tsavo National Park – a park that has subsequently suffered from a plague of elephants (Gomm, 1974). As Tururin, chief of the Pataxo Indians of Brazil, has put it, "We Indians are like plants: when changed from one place to another we don't die but we never fully recover. We will not leave here because even before the reservation existed we already lived on this land. It may be bad, it may be good but it's our land." But in Brazil the previously isolated ecosystem people are being threatened or destroyed by the massive drive for the exploitation of Amazonia – a process far less benign than any effort to create national parks (Supysáua, 1974).

It is characteristic of wealthier biosphere people that they do not want to stay at home. They wander the globe always searching – searching for something they seem to have lost along the way in their rush to capture the resources of the world and accumulate its wealth. Thus they give rise to the tourist industry, and this in turn provides a financial justification for creating and maintaining national parks. In these parks the wanderers can see some of the wonders that they left behind, and can pretend for a while that they have not really destroyed the natural world – at least not all of it. They will pay highly for this experience. But for some reason the money nearly always tends to be channelled back into the biosphere network. It does not go to those who were once ecosystem people and who have the strange idea that what is now called a national park is really just the land that was home.

[more →]

Brand

Ray Dasmann at Berkeley in 1976 urging geographers and students to live, – not just talk – their knowledge and beliefs.

This situation must not continue. National parks must not serve as a means for displacing the members of traditional societies who have always cared for the land and its biota. Nor can national parks survive as islands surrounded by hostile people who have lost the land that was once their home. Parks cannot survive in a natural state if they are surrounded by lands that are degraded or devastated by failure to obey the simplest ecological rules. Today, with the increase in human numbers and the enormous pressure being exerted on all ecosystems, one of the distinctions between ecosystem and total biosphere is being broken down. No longer can biosphere people remain buffered against the breakdown of particular ecosystems. A drought in India or North America now has global repercussions. The entire biosphere is now becoming as closely interconnected through human endeavour as the most delicately balanced ecosystem within it. Not just national parks but nature conservation in its fullest sense are now becoming absolutely vital.

Few anywhere would argue with the concept of national parks, but many would argue with the way the concept has been applied – too often at the cost of displacement of traditional cultures, and nearly always with insufficient consideration for the practices and policies affecting the lands outside of the park.

ESTABLISHING NATIONAL PARKS IN THE SOUTH PACIFIC

Here in the South Pacific there is no doubt that more national parks, or something equivalent to them, are badly needed. There is some question, however, about what kind of national park, and how it is to fit in with the patterns of life, and the necessities of life, for those people who inhabit the Pacific. I would suggest that the ideal national park for the Pacific islands would be fairly close to what existed here before the invaders from Europe and Asia took over. I do not propose, however, that we attempt to turn back the clock. I am suggesting, however, that in going forward we take into account some rules that should be mandatory for those agencies, national or international, responsible for advocating or creating new national parks.

1. The rights of members of indigenous cultures to the lands they have traditionally occupied must be recognized, and any plans for establishing parks or reserves in these lands must be developed in consultation with, and in agreement with, the people involved. Papua/New Guinea has been taking some noteworthy initiatives in this direction, and I trust that their government will continue along this course. Furthermore, the Australian government has now fully recognized the rights of its Aborigines to their lands, including full control of mineral rights.

2. Recognizing the long-prevailing balances that have existed between people and nature in areas where traditional societies have remained isolated from the influence of biosphere cultures, the establishment of fully protected areas in which these people can maintain their isolation *for as long as they wish to do so* should be encouraged. Such areas will do much to further the conservation of nature, and equally important, will protect ways-of-life that are in balance with nature. We all have much to learn from these traditional cultures. In this respect there are some examples to follow. The Manu National Park in Peru shelters an isolated Indian tribe which, for the present at least, remains undisturbed. The

Odzala National Park in the Congo provides a home for Pygmy peoples. In Botswana and South Africa the 6 million hectares of the Central Kalahari Game Reserve and Kalahari Gemsbok National Parks permit the Bushmen to continue their traditional hunting life. There were once some good examples in Brazil also, but I am afraid that these are being brushed aside in the sacred name of "development" (Supysãua, 1974).

3. Wherever national parks are created, their protection needs to be co-ordinated with the people who occupy the surrounding lands. Those who are most affected by the presence of a national park must fully share in its benefits, financial or other. They must become the protectors of the park, whether they are directly employed by the park, receive a share of park receipts, or are in other ways brought to appreciate its value. Without this, we will find that we are entering a waiting game, at best. The people outside the park will await the change in government or the relaxation of vigilance that will permit them to invade the park.

4. Land use in areas surrounding parks must be compatible with the protection of nature inside the park. This too will require negotiation and understanding among the people who own or occupy these lands. It cannot be effectively accomplished by some sweeping government decree unless the lands are unoccupied.

This is not a comprehensive list of rules, but only an attempt to emphasize those rules which have been far too generally ignored in the establishment of national parks in the past. However, if national parks are really to survive, and if they are going to accomplish their objectives, then we must have more than just a set of rules concerning the parks and their surroundings. I cannot see much hope for the future of either parks or people, unless some of the old sense of belonging to the natural world, of being a part of nature, and not hostile to it, is restored. In an article prepared for **Planet Drum**, Jerry Gorsline and Linn House have made this comparison:

> We have been awakened to the richness and complexity of the primitive mind which merges sanctity, food, life and death – where culture is integrated with nature at the level of the *particular ecosystem* and employs for its cognition a body of metaphor drawn from and structured in relation to that ecosystem. We have found therein a mode of thinking parallel to modern science but operating at the entirely different level of sensible intuition, a tradition that prepared the ground for the neolithic revolution; a science of the *concrete*, where nature is the model for culture because the mind has been nourished and weaned on nature; a *logic* that recognizes soil fertility, the magic of animals, the continuum of mind between species. Successful culture is a semi-permeable membrane between man and nature. We are witnessing North America's post-industrial phase right now, during which human society strives to remain predominant over nature. No mere extrapolation from present to future seems possible. We are in transition from one condition of symbiotic balance – the primitive – to another which we will call the *future primitive* . . . a condition having the attributes of a mature ecosystem: stable, diverse, in symbiotic balance again. . . . If we wish to integrate our cultures with nature we do so at the *level of the ecosystem* which everywhere has a common structure and progression but everywhere varies specifically in composition and function according to time and place (Gorsline and House, 1974).

I would propose that the answer for nature conservation in the South Pacific, as elsewhere, will be found to lie in the direction of "Future Primitive." This does not mean the rejection of the best of modern technology, but it does mean the avoidance of the worst. It does mean using the tools and energy that are still available to create something permanent, to create a way of life that can be *sustained*. In such a way of life, nature conservation would necessarily be taken for granted, since people will recognize that their future depends on the health and diversity of the natural world.

Already some of the handwriting is beginning to appear on the wall. The airlines are in serious trouble; the tourist industry is struggling to survive. No future can be built around a national park system that depends on the big jets arriving around the clock and pouring their loads of wealthy Asians and Europeans into the island scene. Unless some miracle fuels are invented soon, the big jets will be increasingly empty and some day they may not come at all. The economies of the technological biosphere society are in a chaotic state – and no two economists can agree about their future direction. Those who live in the Pacific and who have any sense of prudence would be wise to look to their own resources, their own levels of population, and to turn back to examine some of the old skills and ways of life that have been left behind. Not too long ago most people in the Pacific were ecosystem people. Now I would propose that the future belongs to those who can regain, at a higher level, the old sense of balance and belonging between man and nature. ■

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Biogeographical Provinces

World-wide the existing national boundaries are for the most part absurd, particularly in those Third World regions where former colonial powers decided where the lines should be drawn. If people were allowed to sort themselves out rationally some new array of ethno-biotic entities would take the place of the existing nation states.

BY RAYMOND DASMANN

Is there any reason to produce a new classification for a natural world that has already been classified and reclassified by numbers of ecologists and geographers? Why draw lines on a map and say that the areas enclosed are to be called biogeographic provinces? Do these have any meaning in reality? To answer these questions I'll start by saying that I was drawn into the mapping game by the demands of conservation. In the IUCN (International Union for Conservation of Nature and Natural Resources) headquarters in Morges, Switzerland, we wanted to know the extent to which the various communities of wildlife were being protected by existing national parks, reserves, or other protected areas. From this we could determine those areas most badly in need of conservation and establish some priorities for action.

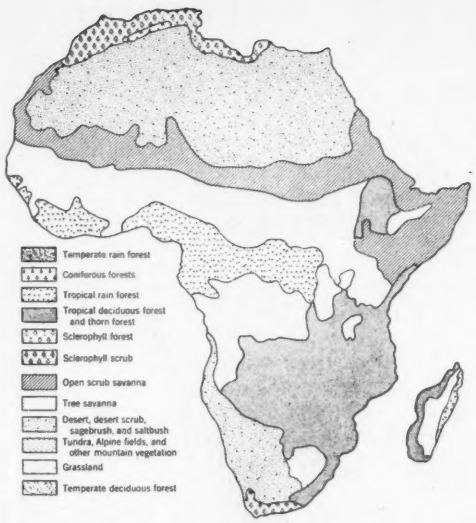
Examination of existing systems of classification revealed inadequacies. Plant ecologists had developed many systems based on taxonomic relationships of plants, or upon the appearance or ecological characteristics of vegetation. These did not, however, take animals into account, and we were concerned with protecting the greatest array of animal and plant species.

In North America, early in this century, the plant ecologist Frederick Clements joined with the animal ecologist Victor Shelford to produce the *biome* system of classification.[1] Biomes are easily recognized, they are the obvious subdivisions of the world's biota – the desert, grassland, coniferous forest, tropical rain forest, and such. They are characterized by one prevailing dominant form of "climax" vegetation, meaning that which will develop if nature is allowed to take her course over a few centuries, without human interference. The prevailing climate shapes the climax vegetation along with the soils and associated animal life.

The biome system of classification has now been widely accepted and has been the basis of many international research programmes, but for conservation purposes it does not go far enough. For temperate and arctic North America, Clements and Shelford did a reasonably thorough job of subdividing biomes into associations and smaller units of classification. These could have been the basis for a conservation-oriented system. But the challenge was not picked up on other continents, and there only the larger units are recognized.

It began to appear inevitable to us in IUCN that if we wanted a global system that would take into account not only vegetation, but also plant and animal species distribution, we would have to do more work, starting from whatever system seemed the most promising. This then became a task for IUCN's Commission on Ecology, with the job of preparing drafts and sketch maps largely falling into my hands. After several preliminary publications, the principal work was passed over to a biogeographer, Professor Miklos Udvardy, of Sacramento State University. He has produced the maps which form the basis for what is presented here.[2]

The scheme of classification that we developed was not really new. In the 1940s the *biotic provinces* of North America were mapped by Lee R. Dice of the University of Michigan.[3] Like other American schemes, however, this one was not adopted in other countries. Nevertheless it seemed a good basis on which to work, taking into account as it did the distribution of both plant and animal species. The IUCN task was to extend the biotic province system to the entire world, and this was done in a preliminary way, recognizing that our knowledge of many areas was inadequate. Udvardy, however, pointed out that the term, biotic province, had become through usage,



From: *Environmental Conservation* (fourth edition). It's reviewed on p. 25.

almost synonymous with *faunal province*, and plants had been forgotten. He proposed the new term *biogeographic province*, which has yet to be corrupted.

It can be said that biogeographic provinces are simply subdivisions of biomes, based on animal and plant distribution. To a degree that is true, but we have freed ourselves from the question of what is, or is not, the true climax vegetation which is involved in the Clements-Shelford system. Essentially biotic provinces are areas that differ considerably, either in their animal or plant species, or in the character of their vegetation, from one another. To illustrate the concept, I will use the example of California, since it is the area I know best. The state includes

← *"If we can agree that biotic provinces are indeed different, then we can agree that to protect a particular array of plants or animals we should establish at least one reserve in each province. . . . It makes more sense to establish a national park in the Sahara, in a place where desert wildlife survives, than to establish another park in the East African savanna."*

The new map of World Biogeographical Provinces →

World Biogeographical Provinces, pictured overleaf, reflects recent theory and still accumulating knowledge on how best to comprehend the Earth's biosphere. The map is 22" x 38", full color, available from us (Box 428, Sausalito, CA 94965) for $3.00 postpaid (mailed in a tube).

I had been hearing for years from Peter Berg, Gary Snyder, and Huey Johnson about Ray Dasmann's philosophy and research on biological "provinces" and the fundamental effect on political thinking which they might have. Last winter when we were gathering material on Carl Sauer at the Geography Department of the University of California, Berkeley, I asked department head James Parsons who might be best to help us with such a map project. Without hesitation Parsons said, "Professor Oberlander."

Right he was. Ted Oberlander, 43, teaches and researches primarily in geomorphology at Berkeley, with a considerable sideline in cartography, not to mention painting and sculpture. Immediately enthusiastic about the map, he agreed to organize the whole cartographic end. This involved taking the rough regional sketches in the Udvardy paper which elaborated on Dasmann's scheme and re-orienting them to a projection suitable for a world map. He and his assistant, the painstaking Julia Odenweller, found that between paper and map lay numerous minor ambiguities. They resolved them (some with Udvardy's help) and prepared the 15 peel-coat sheets (one for each value of a process color) which were merged by the printer into the four composite negatives for four-color printing. Considerable midnight oil was burned in the process.

The design of the map is primarily Ted's (his credit to me is unexpected and undeserved). We decided to leave out everything extraneous — national boundaries, cities, even mountain ranges and names of rivers — so as not to clutter the map. Major watercourses were left in for orientation and to show how they effect biogeographical boundaries. It would have been nice to include mountain ranges for the same reasons, but we couldn't do it and keep the map readable. The intuitively-sound shading of the various zones (yellows for desert, greens for forest, blues for arctic) is purely Ted's, and a tricky business it was to make it work right.

We regret the absence of Antarctica (there's not too much biogeographical to say about it). We hope that eventually the various biogeographical regions of the Ocean can also be charted. Author Udvardy welcomes detailed criticism of his biogeographical scheme — the research is still in progress. Hopefully we will print revised versions of the map as the information refines.

—SB

Smiles and groans and more hours checking the press proof of World Biogeographical Provinces *for errors. CQ's Andrew Main, who handled printing, left; cartographer Theodore Oberlander right.*

A 1/3 scale black and white photo of the first press proof of WORLD BIOGEOGRAPHICAL PROVINCES. Can you find the mistakes, such as the strange happenings around province 7, Serra do Mar, in the Neotropical Realm?

OGHICAL PROVINCES

klos ardy, 1975

The Udvardy paper cited in the lower left corner of the map can be bought for $5 from: International Union for Conservation of Nature and Natural Resources, 1110 Morges, Switzerland. The same goes for the Dasmann paper in the references at the end of this article.

Three biogeographic provinces in California: redwood, chaparral, and desert. From: *Environmental Conservation.*

"A sense of identity or place develops where an individual grows up within a particular province and learns to recognize its flora and fauna, to respond to its climatic regime, to become familiar with its limits. Many serious land use blunders could have been avoided if people had not tried to transplant land-use practices developed within one biotic province to the differing ecological conditions of another."

all or part of 5 biotic provinces: Oregonian, Sierra-Cascade, Great Basin, Sonoran and Californian (a sixth that I had added, the Channel Islands, has been dropped by Udvardy).[4]

The Oregonian province belongs to the Northwest and extends up to Canada. It is a region of tall, massive coastal forests, rain drenched in winter, often fog bound in summer. A greater mass of vegetation per square mile grows here than in any other area of the world. California has its own unique subdivision of this province, in the redwood region of which it shares only a small corner with Oregon.

The second extends along the high mountains of the Pacific Coast from the Fraser River in British Columbia south through the volcanic Cascades and then down the Sierra Nevada to the Tehachapi Mountains. Although the Sierra and Cascade sections differ strongly geologically, their vegetation and animal life do not separate out sufficiently to warrant different provincial status. Their vegetation is arranged in the life zones characteristic of western mountains, with a broad band of ponderosa pine near the lower edges of the province and a fringe of timberline forest at the upper limits of tree growth.

The third province belongs to the intermountain region, from the Sierras to the Rockies – the Basin and Range province of physiographers. California includes only a small area, in the Lassen-Modoc region of the northeast, and the Inyo-Mono section east of the highest Sierra. This is a country characterized by sagebrush, juniper and pinyon pine.

The fourth province is desert and has its affinities with Arizona, New Mexico and Sonora. California's Mojave and Colorado deserts have many differences from their counterparts across the Colorado River, but not enough to be called separate provinces.

All of the rest of the state is in the Californian province, which has a fauna and flora characteristic of California and, in most respects, of nowhere else. This is the region of chaparral, broadleaved evergreen forest and woodland, of open oak savannas and prairies that are summer dry, and winter green.

I have analyzed the differences in mammalian species distribution between the provinces, admittedly using fairly crude methods. The greatest similarity is between the Oregonian and Sierra-Cascade provinces, which had approximately 68 per cent of their mammal species or subspecies in common. This was not enough difference to warrant provincial separation on the basis of mammals alone. Much greater differences show up, however, in bird faunas and in vegetation. By contrast the Great Basin province shares only around 36 per cent of its mammal species or subspecies with the Sonoran, and 38 per cent with

the Californian province. The Californian province has less than 50 per cent of its mammal species or subspecies shared with any other province.

If we can agree at this point that biotic provinces are indeed different, then we can agree that to protect a particular array of plants or animals we should establish at least one reserve or other protected area in each province. Looking around the world, however, we find that whereas there are many national parks in some provinces, those of the African savanna, for example, there are none or scarcely any in others – the desert and semi-arid provinces of the Old World, or in various tropical rain forest provinces. If there is to be a choice it makes more sense to establish a national park in the Sahara, in a place where desert wildlife survives, than to establish another park in the East African savanna.

However, the usefulness of the province concept can be extended beyond the practice of plant and animal species conservation. They represent areas within which ecological conditions are relatively uniform, with certain natural potentials and limitations. During human history societies and cultures developed within certain provinces and adapted to their potentials and limitations. A sense of identity or place develops where an individual grows up within a particular province and learns to recognize its flora and fauna, to respond to its climatic regime, to become familiar with its limits. Many serious land use blunders could have been avoided if people had not tried to transplant land-use practices developed within one biotic province to the differing ecological conditions of another.

In the United States we are cursed with state and county boundaries drawn with straight edges by people who did not know the land. Would it not make more sense to re-orient them toward ecological realities? World-wide the existing national boundaries are for the most part absurd, particularly in those Third World regions where former colonial powers decided where the lines should be drawn. If people were allowed to sort themselves out rationally some new array of ethno-biotic entities would take the place of the existing nation states.

I don't think we have gone far enough yet in our thinking about biogeographic provinces to start reorganizing the political world. People have been living on the planet for too long for their influence to be ignored. The distribution of human groups which have developed a sense of self-identity is at least as important as the distribution of plant species. One cannot put the English and Irish in the same country just because they share a biotic province. However, if we are to find a way out of the mess in which global industrial culture has placed us, the biogeographic map could be pointing in a useful direction. ■

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Institute for Bioregional Research

We owe some of the impetus for publishing these matters to poet and bioregionalist Allen Van Newkirk, whose comments follow.

Bioregional research involves study of culturally induced changes in the distribution of wild plants and animals. We want to know how the natural regions of the Earth have been successively inhabited and, often, deformed by various cultures. Ultimately, bioregional research seeks to discover, analyse, and map the distributional patterns of these cultures in relation to our natural wildlife regions. These biogeographically interpreted culture areas are here called *bioregions*. We believe that this study – which might also be called *regional human biogeography* - will throw new light on a variety of cultural possibilities now open to our species.

Toward a Bioregional Strategy for Human Cultures

A goal of bioregional research is to encourage development of multiple participatory strategies of cultural adaptation toward restoration of the integrity of wild plant and animal diversity in each of the discoverable bioregions.

Some of our exploratory concerns include:

- **Mapping of the biologically significant areas of the Earth's surface with discussion of their natural and cultural history.**
- **Analysis of the varieties, dynamics, and ranges of domesticated areas (on a scale of decreasing biotic potentialities) in comparison with one another, with similar analysis of wild areas (on a scale of increasing biotic potentialities), and with the continuity of biological evolution.**
- **Historical reconstructions of wild areas now domesticated with suggestions for extension or restoration of the ranges and populations of wild species and species-complexes.**
- **Late Pleistocene and early Holocene cultural adaptations and dispersals; invasions of human cultures into wild areas resulting in adaptations or maladaptations; and existing pressures of human cultures on the ranges and populations of wild species.**
- **Perceptual problems encountered by diverse cultures in the understanding of habitat as an element in the biogeographical configuration of space.**
- **Cultural adaptations to biologically significant areas - *applied human biogeography*.**
- **Bioeconomic and biotechnic instrumentation at the level of bioregions and their locales.**
- **Language, poetry and mythos as tools of bioregional cognition in the Indo-European, Amerindian and other traditions.**
- **The reconstructive bioregional arts.**
- **Commentary, review and speculation lending itself to themes of bioregional history, consciousness and culture.**

Correspondence from individuals interested in engaging active research with the Institute is most welcome. Address all inquiry to:

Allen Van Newkirk
Institute for Bioregional Research
Box 47
Heatherton, Nova Scotia
Canada

Controversy Is
Rife on Mars

INTERVIEWING CARL SAGAN AND LYNN MARGULIS

The spectacular, baffling findings of Viking on Mars have brought Space back into the public mind for the first time since the Moon landings seven years ago. This time people are witness to science in process – complex experiments, contradictory data, conflicting interpretations.

At Carl Sagan's invitation I covered the Viking I landing for CQ. *(The last time I stayed up all night was my last peyote meeting years ago.) It was a psychedlic occasion once again as Mars gradually came through all that press equipment and muddle and took over. The first photo of the Martian surface, which came immediately after landing, was electrifying. You felt you could reach out and touch those rocks – how far away?*

These two phone interviews were done the weekend of Sept. 3-6, 1976, just after Viking II landed successfully. The first complete set of life-detection experiments by Viking I was over and was busily being interpreted. Lynn Margulis had just returned to Boston from the Viking scene at the Jet Propulsion Laboratories (JPL) in Pasadena, California. She'd been at JPL for several days as a member of the Exobiology Subcommittee of the National Academy of Science Space Science Board, observing the quality and content of the biology going on with Viking.

Lynn has a special interest in Mars because she and her co-author of The Gaia Hypothesis, James Lovelock, have formally predicted that no life would be found on Mars. Their reasoning is that the Martian atmosphere is consistent with strictly chemical processes, in contrast with the Earth's atmosphere which shows chemical anomalies explainable only by the pressure of gas-producing organisms. According to the Gaia Hypothesis, the Earth's life effectively modulates the atmosphere, buffering it against major perturbances (Summer '75 CQ*).*

I talked to Carl Sagan, one of the scientists working on Viking, on the night after Viking II landed. The CQ*'s participation in Viking is entirely Carl's doing. We're grateful.*

–SB

Stewart Brand: Hello Lynn. How are you?

Lynn Margulis: I broke my rib in California.

SB: What?

Margulis: This guy had just got a motorcycle and was riding it, so I thought I could do it too – consummate self-confidence based on nothing. So I pushed the handlebars in the wrong direction, and accelerated instead of stopped, and the whole goddamned bike landed right on my rib.

SB: Well, how's the Gaia Hypothesis, in view of Viking?

Margulis: It's flying. We may be right. It looks like there's no life on Mars.

SB: You'd better get specific. First of all, how does Viking overall look to you?

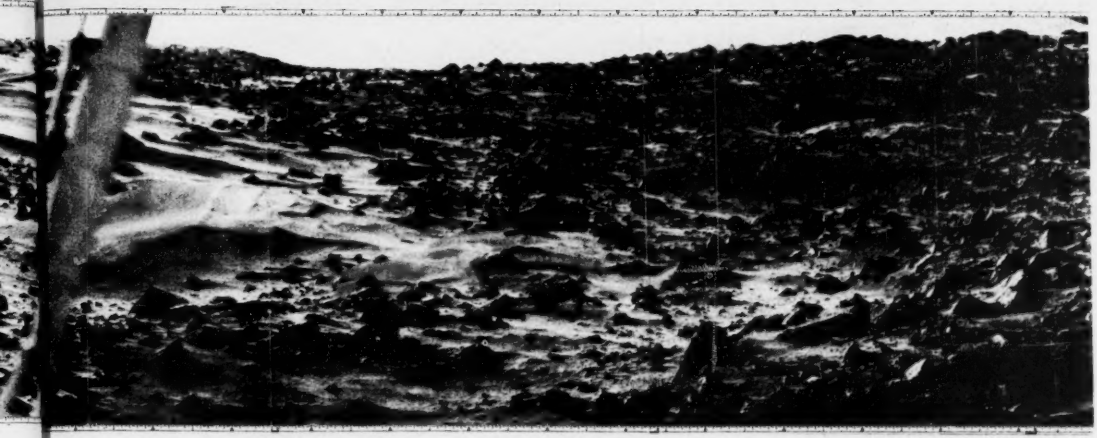
Margulis: It's an unbelievable success. Everything is working beyond their wildest dreams.

SB: How do the biology experiments look to you at this point?

Margulis: The thing is that if there's any problem, it's a problem in interpretation, rather than in technical problems, because the engineering's worked unbelievably well. They're getting good data, as good as conditions permit. Do you want me to tell you about it from the beginning?

SB: Sure.

Margulis: There are three experiments that are called the biology package, and there's a fourth experiment, more important than any of those for biology, and that is the GCMS, the Gas Chromatograph Mass Spectrometer. It is an instrument that was tuned up to look for organic carbon and organic nitrogen compounds, going up to molecular weights of 400 or so. There's not a piece of soil in the world you can pick up that it wouldn't detect organics in. In fact, you can just run your fingers across a piece of glass, and there's plenty of organic matter in your fingerprint to show up in that machine, because the sensitivity goes from parts per million to parts per billion of organic stuff. This is Klaus Biemann's instrument.



7:30 a.m. on Mars, looking east from Viking I at a dune field. The boulder on the left is 25 feet away and measures about 3 feet by 10 feet.

The chromatograph is very sensitive, and it's hooked up to a mass-spectrometer which allows you to immediately look at the mass numbers, the number of atoms in whatever you see on the gas chromatograph. It's a double control on it – an excellent instrument. The point is that it's detected zero. That's NO organic compounds, no organic nitrogen or carbon compounds. Therefore all the biology experiments have to be looked at in that light, the fact that there's no organics in the samples at all.

SB: How many tests has the gas chromatograph made?

Margulis: As far as I know it's made two. One is a low-temperature run with stuff pyrolyzed – that is it's heated up without oxygen – and that gets almost all of the not-very-tightly-bound organics. That would give off all your amino acids and all kinds of small organic acids, if you ran it on an arbitrary soil sample on the Earth. And then they did a high temperature run, I think at 600° C, which will break up organic goop, tars and things they call kerogen and humic acids. High molecular weight incomprehensible materials get broken down into component parts, and you never know what the high molecular weight stuff is but you know what it yields. Both those runs were done with internal controls on them to be sure the instrument is working, and the instrument is definitely working. For example the instrument is seeing background atmospheric gases the same as the entry probes did, so it's definitely seeing things that are there.

It's essentially seen no carbon except oxidized carbon, CO_2 and CO, so any biology results have to be interpreted in the light of the fact that there's no evidence of organic compounds. Now, such organic compounds may be there, they could be under the surface or they could be hiding somewhere, but they're not in the samples.

Viking I landing site on the Chryse plain.

SB: If they were in the atmosphere, would they be picked up?

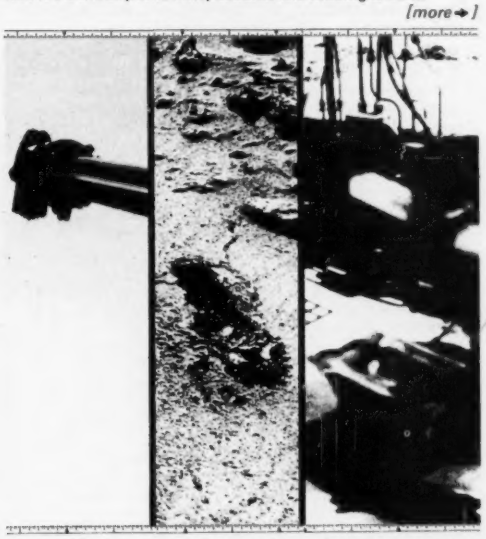
Margulis: Oh yeah. They're not in the air by other criteria. Everything is in a very oxidized state. You know what happens to organic matter, it just burns, so the carbon is in CO and CO_2, and that's very bad for organic material, those conditions.

Most people feel that some organics ought to be on Mars because of meteorites. There's organic matter being brought in by meteorites, and we're not even detecting that. So that means that it's either been destroyed, or it's been preserved deeper down than the samples have gone.

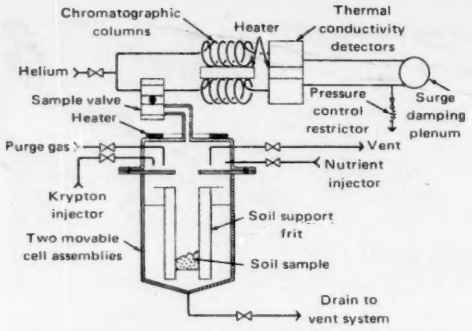
SB: So the finding is even lower than expected?

Margulis: It's incredible. To me, it makes the biology much more easy to interpret, because it's a much more clear-cut negative result than I would have anticipated. I was anticipating a very low organic finding, which would be ambiguous, because you don't know whether that's from meteorites, or whether it's from pre-biotic processes, or what else. But in fact it's a moot point now, because the reading is zero.

[more➔]



Viking I's telescoping scoop takes the first sample of Martian "soil" and dumps it in the hopper (right) for analysis.



The gas exchange experiment showed an unexpectedly high release of oxygen after the Martian "soil" sample was wetted with nutrient.

SB: Why is everyone interpreting the other three experiments as being still possible for life?

Margulis: I wouldn't say everyone. There's no doubt some fancy chemistry going on on that surface, because you've got the results of the three other experiments — all mutually contradictory, so there's almost no way of getting a single result to satisfy all three of them. There's been a lot of criticism of those particular experiments. They were designed under a much more favorable impression of the Martian surface. They were designed in '68 or something, and that's part of the problem. They were fixed very early.

SB: I remember you said in Florida at the Viking launch that they were probably too hot and too wet.

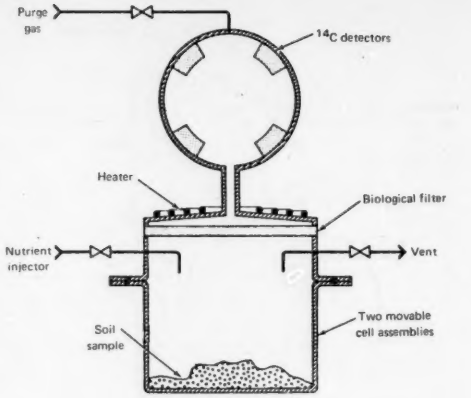
Margulis: Both, yeah, with the exception of Horowitz's, which is only too warm. You've got three of them. The first is the gas exchange experiment. That's Vance Oyama's experiment. The whole concept of monitoring gases is I think basically an excellent one, but the problem with that particular experiment is that it's only been run by moistening the soil with one of the most complex media I've ever seen. It has I don't know how many components, all kinds of organic compounds and vitamins — dozens of different things in that medium. That's the "chicken soup." They moistened the soil, and then they monitored the gases above it. Now, if you do that on the Earth you get a whole profile of gases being removed for respiration, and being produced, and metabolism — you get a whole lot of gas exchange going on. What they found is that as soon as the moisture hit that Martian regolith (I say regolith instead of soil because to me soil is a very organic thing; that's the word they use for the moon covering) . . . as soon as it hit that, you got this production of oxygen, relatively large, about 15 times what would have been expected, and most people feel that you've got some sort of peroxide, or some kind of oxygen-holding material in the sample that released the oxygen on wetting. In fact Phil Ponnamperuma (he's an incredible guy) may have already been able to simulate this result with very very dry peroxide-containing material. You add water and you heat it up and oxygen is eliminated. The exact Martian simulation isn't known, but most people feel that it's a chemical response to the adding of the water. Also it may or may not have anything to do with the complex medium.

SB: They don't have the ability to do a control with just water?

Margulis: Don't ask questions like that.

SB: Come on.

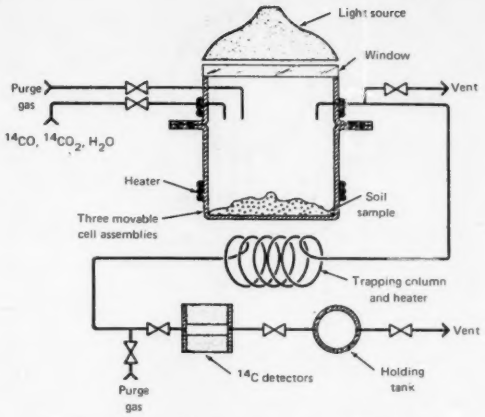
Margulis: They make me laugh, and laughing is very bad for a broken rib. They do have certain controls, but one of them is not water alone as far as I know. They have a "sterile" soil control, and you get less response after you heat the soil up first. But whether you're sterilizing, or whether you're inactivating a chemically active surface or what the hell you're doing by heating it up is ambiguous. There's all kinds of things that respond to heat that aren't biology, right? Anyway, I think most people feel that the release of oxygen is very interesting, and you're going to learn something about the Martian surface, but it has probably nothing to do with any kind of living response. You see, it stayed constant. It gave off the oxygen and then it stayed constant over quite a long period of time. Which is what happens when you add chemicals and mix.



In the labeled release experiment, radioactively tagged carbon-14 in the nutrient showed up almost immediately in gases given off by the wetted sample, climbed steeply, and then leveled off after 9 hours.

OK. The second experiment is Gilbert Levin's labeled release experiment in which he has carbon-14 — radioactive carbon-labeled materials — in his so-called medium. Again, hot and moist. Too hot, and too moist. Much hotter and much more moisture than one would expect on the Martian surface. Parenthetically, the gas chromatograph, the GCMS that I spoke about first, measures water, and some water came out at low temperatures, but what was very impressive was that a lot of water came out at relatively high temperatures, implying that the water is tightly bound. It's water of hydration in the minerals themselves.

So it's really dry stuff. Basically we're talking about a slight amount of water vapor, measured in precipitable microns, where on the Earth it's centimeters. Now, the labeled release experiment shows some incorporation. What they're looking for is release of the radioactivity as radioactive $^{14}CO_2$. In other words, they're adding radioactive food and looking for radioactive waste products. And indeed they got radioactivity in the form of $^{14}CO_2$ coming off, and I think they got more released than with the "sterilized" sample. But, again, you don't know whether you're releasing natural radioactive C-14 in the soil, or what kind of chemistry is going on in the components of the medium. This labeled release experiment



The pyrolytic release experiment put radioactively tagged ^{14}CO and $^{14}CO_2$ gases with a sample in artificial sunlight, let it incubate for several days, and then heated it to see if tagged carbon had been incorporated by the sample. It was, and markedly more than in a "sterilized" control sample.

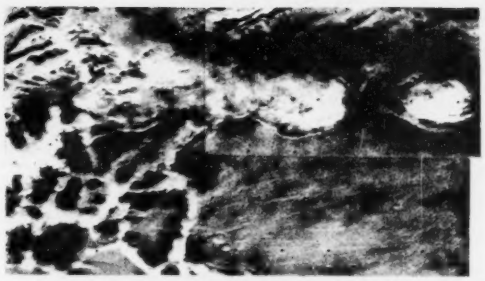
is another one that can be essentially imitated in the laboratory in a non-living way. You can just add chemicals until you release radioactivity. So both of those experiments are too hot and too wet, and have alternative interpretations, and neither of them are giving you the kind of complex response you get if you tried to monitor even a desert soil on the Earth.

The third one, the pyrolytic release experiment, had a very interesting result, and no one knows how to interpret it. It's got to be interpreted. This is Norman Horowitz's experiment which looks at the incorporation of radioactivity introduced as ^{14}CO and $^{14}CO_2$ – tagged carbon atoms. Now, this is tricky, because if you were on the Earth you'd be convinced by the finding, but the Martian conditions are weird, and you're not sure. What you do is, in the light you add a sample of radioactive ^{14}CO and $^{14}CO_2$. (That carbon monoxide is in much higher percentage, unfortunately, than in the Martian atmosphere.) Now, on the Earth you'd get photosynthesis. You'd get the incorporation of these carbon-14 gases into organic matter in the light. You'd also get non-photosynthetic carbon dioxide and carbon monoxide fixation, which means that these things react and get incorporated into living material even in the dark, although the light reaction is a much stronger reaction on the Earth. Now again, the experiment was run at ambient conditions for the spacecraft, which means higher temperatures than have ever been seen on Mars, at least at the latitude of Viking.

SB: What temperatures are those?

Margulis: I think it's 12° or 15° Centigrade (50° - 60° Fahrenheit). All temperatures around Viking so far have measured below 0°C, below freezing, and this experiment is definitely above freezing. They had to run it at the same conditions as the spacecraft, because the machinery won't run at ambient temperatures. But it's not wetter than ambient. There's no liquid water at all in this experiment – only what vapor there would be anyway. Of all the experiments it's closest to Martian ambient. (One could argue in the other two experiments that you essentially drowned everything, because you've added more water than probably has been seen on that planet in a billion years.) On this one even the temperature's not that unreasonable, because in equatorial regions in Martian summer temperatures do get that high.

So in the pyrolytic release experiment after you've added the tagged ^{14}CO and $^{14}CO_2$ you heat the sample and measure



Water vapor on Mars. In the early morning dense fogs form in low areas such as this complex of canyons called The Chandelier.

the radioactivity of what cooks off. The ^{14}CO and $^{14}CO_2$ that was not reacted goes off first. You get rid of that. And then you get only the material that is retained by the column, called the organic vapor trap, which under Earth conditions would mean that it's organic matter. And they did see that there was enhanced radioactivity in this second peak, which implied that the carbon-14 was incorporated into something organic. The results superficially imitate quite handsomely results from pretty barren Antarctic soil. There was something like 96 counts per minute in that second peak, and the "sterilized" control had something like 15 counts, close to the ambient background. So there was an enhanced signal. But we haven't done the same experiment in the dark yet. That's coming.

In some people's minds you've got some sort of positive signal here. In my mind you've got a positive signal that has nothing to do with life at all. That's my particular prejudice, and only time will tell. I know that I'm ready right now to start working on a piece with Jim Lovelock about what this says about the Gaia Hypothesis. We have two controls – Mars and Venus – and Earth is the experiment. Earth has life on it and has all this atmospheric modulation going on which Mars and Venus don't have. I think we're going to get a consensus before the end of the year that there's no life on Mars.

Something else terribly interesting that I realized when I was out at JPL is: the camera's been sitting there surveying the landscape for 40 days, and not one thing has moved in 40 days. Nothing. Not even a dust particle. I just can't imagine sitting anywhere on the Earth for that long and having nothing move except shadows. Even some wind, some weather or something. I'm just asking for some geology, and you're not even seeing that. It's very possible that the surface you're looking at was formed 2-1/2 billion years ago and there's been very little change since then. An occasional meteor impact and an occasional dust storm of very very fine dust.

SB: Do you mean those little trails of sand behind the rocks could have been there for some good while?

Margulis: For thousands if not millions of years. That's something that people want to do is date these things. You do see those river-like channels – everyone agrees that some of those were made by water. There's now no disagreement on that. When you get water-formed channels that have meteorite craters in them it's possible that they're recent craters, but it's much more likely that the channels occurred at very very early stages, when the meteorite rate was higher, and that pushes back the problem to: did life ever arise on Mars? It's certainly possible. Did it arise and die out?

SB: If life were introduced now to Mars, would it find a foothold?

Margulis: If you just set something out, it would die very quickly. It might pop open from the low atmospheric

pressure. The cold temperature per se you can survive in, but you can't metabolize in it, and there's only so long you can sit around waiting.

SB: How big a deal would it be to make the planet habitable, do you suppose?

Margulis: A big deal. A very big deal.

SB: If you carted in the stuff for the atmosphere . . .

Margulis: You're not going to increase the gravity, so you'd have trouble keeping it there. You'd have to have closed containers for atmosphere.

SB: In terms of Gaia, you made some predictions a while back that there'd be no life on Mars because of what you knew about the Martian atmosphere. Does the Martian atmosphere still pretty much have what you thought was in it?

Margulis: It has very much what we thought. It's got all those exhaust gases, all those highly oxidized states of carbon. I'm glad they found the nitrogen, 'cause now we have a number on it, but there's no reduced nitrogen in there, which you need. You see, there are no reduced compounds in the presence of the oxidized ones. Which is our clue. Everything's essentially oxidized.

SB: If there were life you'd look for what gases?

Margulis: You'd look for ammonia, methane, hydrogen, or hydrogen sulfide or any of these things that are flagrant contradictions in the presence of oxygen and CO_2. What you have on the Earth is this sort of flagrant contradiction which would, if left alone, go to a Martian type of state. The fact that you have these reduced gases on Earth with its oxygen-rich atmosphere means that they're constantly being produced by organisms. You don't have any of those kind of contradictions on Mars at all. And that's why Jim and I are going to try to capitalize on the interest in this.

SB: What was your impression of the scene at JPL when you were there?

Margulis: People were pretty much ecstatic. There was the possibility of a crash landing, or of everything not working, but everything worked. They're really getting data, a lot of data. Everyone is up to their ears. I know that the biology team has been having 6 a.m. meetings. Everyone's exhausted, but elated. It's a regular high around there.

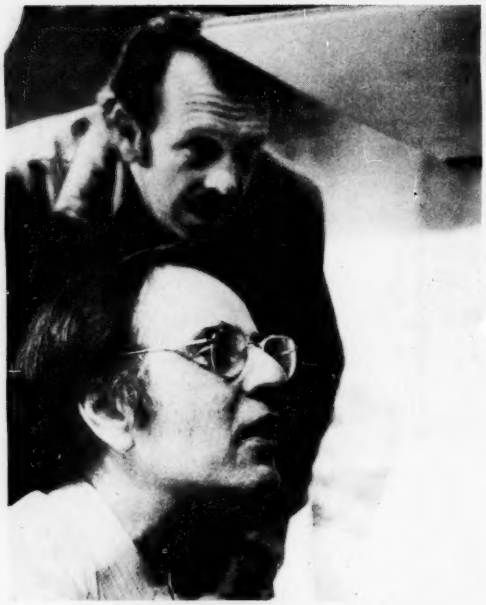
SB: You sound pretty excited yourself.

Margulis: Well, Mars is interesting to me because it's kind of like a naked Earth. As soon as you get a consensus there's no life on Mars, that's where the ball game begins as far as I'm concerned. Because that's when we'll be able to define the ways in which we know life has modulated the Earth. But as long as someone's holding out that there's life on Mars that's modulating the planet, then we don't know how to subtract it, because it would be a totally different kind of life, and its effects would be unknown, and so on. I can't begin on the exercise. So I'm one of the few people, I guess Jim Lovelock too, who are really excited about a good negative result. What I would call this, if I were writing your article, is "The Three Billion Dollar Negative." I don't know if that's the right price, but it's some huge number like that.

SB: So Earth is alone.

Margulis: As far as the eye can see in the Solar system, we're here by ourselves. When you start talking about life elsewhere, that's highly probable, but it's terribly distant, far outside the solar system.

SB: What does this say about the delicacy of the position of Earth in relation to the Sun? Venus is just a bit closer and Mars is just a bit father, and if they're both dead, that puts us in a very narrow cambium.



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July 20, 1976, Viking I landing. Carl Sagan viewing the first photographs from the surface of Mars on a TV monitor. Behind him, an ABC-TV cameraman. Carl was on various national networks practically all day.

Margulis: That's true, but on the other hand, it's known by anyone who's cared to think about it that for life to persist you've got to have open bodies of liquid water. I don't mean steam, and I don't mean ice, which excludes constant temperatures above boiling and below freezing. Life is essentially a variation on the theme of water.

SB: Do you know anybody else besides yourself and Lovelock who've formally predicted no life on Mars?

Margulis: That's a good question. You find someone else* and I'd be very interested. I never ran across it, but you know i don't really read Martian literature very much except what's sent to me that I have to read. I think that there's a general sentiment amonst astronomers that there probably isn't any Martian life, but I don't know if they've said that in any kind of intellectual framework or in a formal way. ■

*In '67 Hitchcock & Lovelock made this prediction based on what we knew then of the atmosphere of Mars. —LM

CARL SAGAN

Stewart Brand: How's it look for Viking II right now?

Carl Sagan: Well, we had a hairraising time during entry because we lost communication with the orbiter, so it was sort of wild, but everything seems to be in fine shape there now. As far as I know, there are no malfunctions at all. We landed in a place with the promising name of Utopia. The landing site some people thought would be filled with small sand dunes, but there's nothing but rocks as far as the eye can see. Many of the rocks are quite strangely shaped, they may be aeolian ventifacts, rocks which are sculpted by sandblasting by windblown dust. Some of them certainly seem volcanic in origin.

SB: It looks enough different from the Viking I site to be interesting?

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The first photograph from Mars on a monitor at JPL. Viking looks down at its own foot. The graph on the right shows how the contrast has been selectively computer-enhanced.

Sagan: It's different, but both Viking I and Viking II landing sites were chosen fundamentally for their blandness, so we should not be surprised if we find that close up they're reasonably bland. We know the planet as a whole is remarkably exuberant and challenging. The reason for the Viking II landing site is that it's warmer and particularly more humid, and since two of the microbiology experiments are oriented towards liquid water it was reasonable to take some additional risks to in some way increase our chances of finding the sorts of microbiology that the experiments are geared to detect. We won that gamble. The landing was successful.

SB: What's your current feeling about the life experiments on Viking I?

Sagan: Well, the results are tantalizing. All three microbiology experiments have given positive results, and what's more each one different from its control experiment in a manner that if we had seen it on Earth, we would not have hesitated to ascribe it to microbiology. But there certainly is a possibility that there's an extremely active and unfamiliar sort of surface chemistry going on on Mars, perhaps due to the fact that ultraviolet light gets to the surface of Mars more than gets to the Earth, and that there's a lot of water bound up in the rocks of Mars, as there is not in the rocks of the Moon. If that's the answer, it's still a remarkably important conclusion because it means that there is a kind of non-biological surface chemistry which duplicates in some substantial detail the biological chemistry of living systems on the Earth. That's both oxidation and reduction reactions. If that's the answer, we have learned something quite important about the origin of life.

SB: Say more about that.

Sagan: Well, if it turns out that (and I stress this is the least interesting possible result) that the surface chemistry is able to simulate biological chemistry, is able to reduce carbon dioxide to organic molecules, well, that's what photosynthesis does; that's what green plants are about. And if the surface materials are able to oxidize organics to collect oxygen and make water, well, that's what respiration is about. If processes which, to some extent, simulate respiration and photosynthesis can occur before there's life on a planet, that means that all biology has to do is simply use the pre-existing surface chemistry. Some aspects of biological chemistry would then be not as major an invention as people usually thought before. So in that sense, these results make the origin of life easier and clarify an important question on the origin of life.

SB: The idea being that such might have been the conditions here before life got going?

Sagan: We would have had ultraviolet light reaching the Earth's surface before there was oxygen in our atmosphere and it was still a reducing atmosphere. And we would have had abundant water on the surface. So in that respect we duplicated that sort of chemistry.

SB: Is it the case that if abundant liquid water were made available on Mars, then something might get going?

Sagan: No, I think both for the Earth and for Mars, the reducing atmosphere necessary for very large scale synthesis of organic molecules is absent. I think if all life were wiped off the Earth in some unimaginable catastrophe, life would not arise again, because of the escape of hydrogen and the absence of reducing conditions. You might have a sort of low level and faint rhythm in the bass, so to say — surface chemistry of both oxidation and reduction reactions which would to a small extent resemble biology. But the theme would be gone.

Of course the other possibility is that all of this peculiar chemistry is indeed due to microbes, and that we have uncovered a Martian biology. I think this is a more interesting conclusion, but either way we will have learned something extremely important.

SB: What do you make of the gas chromatograph experiment which is not showing much of anything?

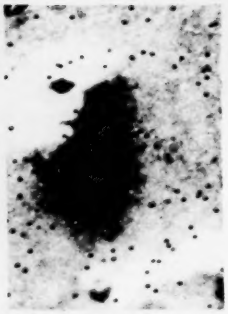
Sagan: Well, that certainly is interesting, but you have to bear in mind that the large amount, almost 1% of bound water in the Martian soil, poisoned the ability of the gas chromatograph mass spectrometer to detect simple organics up to about two or three carbons. So these results were only for much more complex organics, and the results are quite negative down typically for a given molecule to something like 10 parts per billion. That's not very abundant; that's a very very sensitive test. Some people say that there are places on the Earth which have an indigenous microbiology but exceptionally low levels of organic matter, and other people see that as an open question. But suppose it's true that in the one or two places that we've looked there is microbiology but there is no organic chemistry. What's the conclusion? The most likely conclusion is that life on Mars exists in what Lederberg and I 15 years ago called microenvironments. That is, in certain specialized zones of the planet, maybe wet places for example, microbiology thrives; but it's dispersed, possibly by wind. So you can find the bugs lots of places, but they reproduce and are concentrated only in a few. That's at least one possible explanation.

SB: I understand that the GCMS in this experiment was showing even less organic carbon than would be expected from meteorites and such things.

Sagan: That depends very much on the rate of infall and the rate of destruction of the organics, so I don't think that conclusion can be too clear. There are certainly some models of the meteorite infall and ultraviolet photo-destruction which would be consistent with the upper limits of organic matter detected by the GCMS.

SB: Let me be real clear in my understanding of what that is not finding. What would have to be there for it to get a positive?

Sagan: Let's take a molecule, napthalene. You'd have to have more than ten parts per billion of naphthalene for it to be detected. On the other hand you could have huge quantities of propanol or formic acid, say, and you wouldn't detect it, because those are low carbon number organics,



Phobos, the inner of the two satellites of Mars, is about 12 miles wide and 17 miles long. In the Martian sky it shines 1/4 to 1/2 as bright as the Moon on Earth. The other satellite, Deimos, is seen as a bright point of light.

Large Martian. A mesa formation one mile across.

which would be totally obscured by the bound water. That will be avoided by a clever maneuver in the second lander, and so we may have information on the simple organics in the next few weeks.

SB: What other matters look interesting at this point besides the biology?

Sagan: There are a whole bunch of other questions. Why do various landscapes look the way they do? How did they get that way and what does it say about the origins of the planet? How sure are we now that there really was a dense early atmosphere during which water flowed – which looks a lot more likely now than it did a few months ago.

SB: Are they getting a better idea on when that might have been that the waters flowed?

Sagan: Not yet. That'll involve very careful crater counting in the channels – the only available quantitative method of determining the ages of geological features on Mars, and the method certainly has uncertainties attached to it.

SB: What's your activity now?

Sagan: Now that we're done with landing site certification I have a little more time to devote to scientific questions. I'm interested in the physics of wind-blown dust on Mars, the possible influence of ultraviolet light on the microbiology and organic chemistry results, sand ripples on Mars, and a number of other questions. You understand, the Viking mission is a team effort. The results we have were obtained by a large group of very competent scientists and engineers.

One other issue I'm quite interested in is an apparent paradox. There are remarkably well preserved rocks at the two landing sites – sharp angular faces and so on. Yet it seems that the rate of wind erosion in the great sand storms should be phenomenally high. How can we reconcile those two? One possibility is that both landing sites have been only recently exhumed. They might have been covered over with dust for quite long periods of time, and of course there are other places which are in the opposite condition. There may be something wrong with our calculations of abrasion rate and so on, but right now I'm quite excited about this question.

SB: Would it bode well for the biology experiments if those were recently uncovered areas?

Sagan: Interesting question. Maybe. I can only see one model in which that would be the case, which is if there were biology early, and it was covered so the bugs were dormant and protected under a heavy blanket of dust. If the overlying dust has recently been removed perhaps the bugs are now accessible.

SB: Obviously what you'd like to be able to do is drill and make some kind of a core.

Sagan: That's absolutely right, and go to many places – investigate in all three dimensions. I'd like to have a rover with deep-boring core capability. That would be heaven.

SB: Is there hope for such a vehicle?

Sagan: Well, it's interesting. As a precaution against various system failures of the two Viking orbiter-lander combinations, essentially all the pieces of a third orbiter-lander combination were constructed and assembled. So all that's necessary is to put it together, mount it on wheels or tractor treads, make some adjustments in the experiments and launch it off to Mars.

SB: What adjustments?

Sagan: That's still to be debated. At the very least you would want a more elaborate pharmacy.

SB: Namely?

Sagan: I'd like to see more molecules, I'd like to see them added one at a time, and I'd like to have somewhat more control over sequencing, so that if the experiment goes one way you do this, and if it goes another way you do that.

SB: A branching regime.

Sagan: Exactly, a branched contingency tree. Now, that might involve certain additional items of artificial intelligence – which are well within our reach. You know, it's so frustrating, because you see from orbit this fabulous geology, exciting terrain, and then you consciously go and land in the least exciting place. And you're stuck. You can't hop an inch. In the Viking I stereo pictures you see these gently rolling hills with hints of a valley between the hills, and you have this extremely human urge to go take a walk. And you can't do it. But the technology for mounting the whole thing on tractor treads and going off is at hand. You could wander to your own horizon every day quite easily. You'd look around, see the most interesting thing that's far away, go to it, look at it close up, and look around again. And in the likely lifetime of such a space craft you could travel at least many hundreds and perhaps even thousands of kilometers. That's a very big turf.

SB: You're on terrain that treads can handle?

Sagan: Yes. It's a lot easier to wander over rough terrain than it is to land on it. You could have in the vehicle the sorts of feedback loops that you see on toys. When they come to the edge of the table or an obstacle, they know to stop and turn around. It would be able to pick its way among the boulders. If such a device ran into trouble, it could stop and ask for instructions.

SB: Since Viking I landed a month and a half ago have there been any changes in the terrain or the weather?

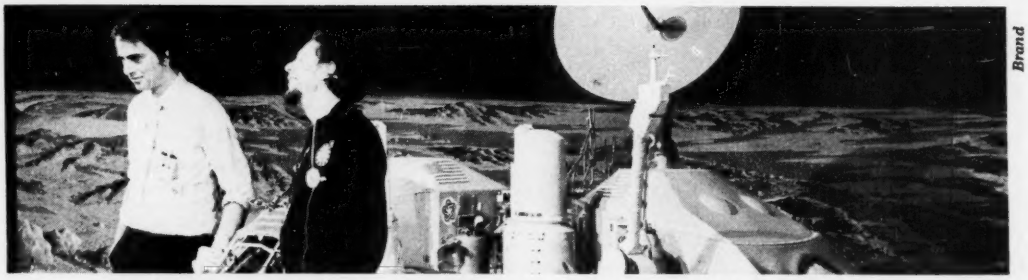
Sagan: The atmospheric pressure is steadily declining every day. In less than two years it'll go to zero, at this rate... that's not likely to happen. What's happening, we think, is that it is winter and one of the polar caps is rapidly growing at the expense of atmospheric CO_2. So the atmospheric pressure is going down. When the season changes the trend in the atmospheric pressure will reverse.

SB: What's the expected lifetime of the landers?

Sagan: It's hard to tell. It might be extremely long, many years. They're not going to run out of power, because they're powered by the decay of radioactive isotopes, so it's just a question of parts failing.

SB: Years being two years, ten years, twenty years?

Sagan: Well, twenty sounds long. Two sounds perfectly possible. The nominal lifetime it's been geared for is 60 to 90 days.



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Carl Sagan and Viking Project Scientist Gerald Soffen on "Mars" between ABC-TV news interviews. The color backdrop is by Don Davis, who painted the CQ's *Space Colony covers.*

SB: How about Earthside? Is the program up for staying with Viking as long as it's alive?

Sagan: There are plans for an extended mission now.

SB: What's an extended mission?

Sagan: That begins after solar conjunction in late December. There are a number of marvelous things that can be done. One is we can move an orbiter so that it can proceed sufficiently close to Phobos – 50 kilometers – to take pictures of one meter resolution, which should be quite an eye opener. In less than three years operation we could photograph the planet pole to pole at better than 80 meters resolution. But the money for such an extended mission is not yet allocated.

SB: I was looking at an image of Phobos and wondering about its size. Is it large enough that if you stood on it would it hold you to the surface?

Sagan: Yeah, you would be held to the surface, although you could probably do a standing high jump of one kilometer. And you could, if you were at all good, pitch a baseball to escape velocity.

SB: And run yourself into some kind of an orbit? If you could get the footing?

Sagan: Well, let's see, at about 20 miles an hour you could launch yourself into orbit.

SB: Considering the kind of jumps you could take, that might be possible.

Sagan: The whole prospect of inter-planetary olympics arises – different records for different worlds.

SB: One thing I've wondered about looking at the eery familiarity of the Martian domain, how much more habitable is it in terms of humans than say the Moon?

Sagan: An unprotected human being would be in trouble in both places of course, but Mars has so much more in the way of available resources than the Moon does, it's just no comparison. Mars is loaded with water. Not in a liquid state but it is available, and all those puffs of oxygen in the gas exchange experiment show it's loaded with oxygen. Not exactly so that you could stick your head into the ground and take a deep breath, but with a little technology you could collect that oxygen. So I would say if people had a serious reason to do it – and I don't know of any yet – I think it would be possible to make some colonies on Mars.

SB: The atmospheric pressure is the equivalent of what altitude above the Earth?

Sagan: 100,000 feet.

SB: Is the Martian atmosphere pretty much as expected from the early data?

Sagan: Yes, the important findings are a few percent of both nitrogen and argon. The importance we give to the nitrogen is that if you want to imagine a microbiology in any way similar to the terrestrial sort, you have to have nitrogen in the atmosphere. But the main thing is the abundance of isotopes of argon and nitrogen – argon 36 and argon 40, and nitrogen 14 and nitrogen 15, which by two separate arguments give evidence for an early dense atmosphere on Mars.

SB: It is less dense now because why?

Sagan: A variety of reasons. The ones that I lean towards are the freezing out of the atmosphere in the polar caps. I think it very likely that the dense early atmosphere is still there, but it's buried.

SB: What's the sunlight at high noon at the site of Vikings I and II versus sunlight at high noon in Pasadena?

Sagan: Half. It's like what you have here on an overcast day.

SB: How does Mars compare with Venus?

Sagan: Well, despite the good operation of the Soviet spacecraft on Venus it got fried in an hour.

SB: So if you have a choice between fire and ice, take ice.

Sagan: Yes. Although it's not always that icy on Mars. But both planets are exotic by terrestrial standards.

SB: It's assumed at this point that Venus has no life?

Sagan: Well, it would have to be a remarkably hardy form of life to survive that 900° Fahrenheit on the surface. A completely airborne sort of biology may not be totally out of the question.

SB: What's the next planetary number for us now?

Sagan: There are two more approved missions, both approved many years ago. One is called Mariner Jupiter-Saturn, which will be launched next year and go by Jupiter in '79, Saturn in '81. That means 30,000 photographs or those two planets. That's a fly-by mission, preliminary reconnaissance, it's not at all a detailed study. And then there will be launched one year later Pioneer Venus, a small rather modest set of entry probes. And that's it. We have no approved viking follow-on for Mars. Nothing like a lander on Titan, a probe into Jupiter, an orbiter around Venus, a rendezvous with a comet, all sorts of meaty kinds of missions that we're fully capable of and our scientific knowledge cries out for. There are no such missions, and there's a serious question that the remarkable set of talents put together for this sort of exploration is going to just simply dissipate, go into other things. As yet there is no government approval for continuing the systematic exploration of the solar system. ■

For continuing information on Viking, *Science News* ($10/year from 231 West Center St., Marion OH 43302) has excellent weekly coverage. Or you can phone (213) 354-7650 for a news report from JPL updated every few hours.

Driving or driven to Space?

Dear Stewart,

Glad to see your fair interview with me in the Summer CQ. I particularly value your concern about moral and ethical problems as may be introduced by the new initiatives offered by space, made possible by economic transportation to and from Earth orbit and our emerging capability to emplace and service large and complex facilities (tools) in the unique space environment. Those new "Public Service Systems" which I touched upon in the interview are no more than unconstrained ideas at this time; undoubtedly there would have to be regulatory control on what their capabilities are used for, but on the other hand their potential benefits to mankind appear truly immense.

I share your concern, and I welcome a debate in CQ, of the rather unprecedented humanistic aspects of what promises to become a most fascinating new frontier, a new era in space. You would contribute a good deal to what I feel is the most urgent need: the "humanizing" of the Space Program.

In reading Wendell Berry's anguished letter against space colonies, I cannot help getting the feeling that some misunderstanding regarding NASA's proposals for the next steps in space may be involved here. A Space Colony Program is not proposed. I would probably share at least some of his concerns if indeed the advocacy of space colonies were that solidly founded and unquestioned as some of the advocates want us to believe. There are snake-oil salesmen at this new frontier just as they were in the Old West. Space colonies may indeed be in our future – let coming generations decide on that – but so may many other "visions" people are dreaming about. Let us keep our options open at this time where we are but at the threshold of new frontiers, and let us plan our next steps to be responsive to mankind's near-term needs and wants while building a solid foundation of ethical responsibility and technological capability from which an open, choiceful long-term future (or futures) becomes accessible. That alone, in my opinion, provides validity to the Space Program.

By doing this one step at a time where each stepping-stone is of practical benefit to man's contemporary needs, the Space Program will pay its own way over and over again. It is a fact that the pursuit of space goals generates innovations in virtually all fields of science and technology, and therefore helps stimulate progress in areas not even remotely connected to the original program. Such high-technology endeavors are strongly anti-inflationary; they result in significant rates of social return out of all proportions to their cost. From secondary applications of space technology alone, each new dollar invested annually on space research and development would presently return $23 over a 10-year period, – that's more than 40% return-on-investment annually over 10 years. How much more can we gain by actually designing the "stepping-stones" to the long-range dreams primarily for near-term Earth-benefitting use! This is what, in your interview, I called "Space Industrialization," a progressive program to provide permanent, practical and commercial utilization/tools of space through products and services that create – in the long run – new values, jobs, and better quality of life for all mankind instead of just for a measly 10,000 living in some space colony. Its funding would gradually shift from the public to the private sector as risks are lowered enough to become acceptable to private industrial entrepreneurs. This does not preclude, but in fact validate, the option that Space Industrialization may grow by natural force into Space Colonization.

What do I mean with "natural force"? Let me speculate.

When some life form stands at the limit of its further development, it receives "instinctive" properties from nature that enable it to surpass these limits. Eternities ago certain types of fish gained the ability to go up on the land and turn into life forms capable of spreading out over the continents. Long long afterward man came and in time gained the ability to build ships and emigrate to new land areas. Life is something that grows constantly, expands in all directions, wants to fill voids and bring order to chaos. The pressure of life forces life forms further. We are experiencing this today on a different scale. Today we are building space ships. And we have made the first journeys to another world.

Will there then be large-scale emigration from Earth in the distant future?

Yes, undoubtedly. Pressure in that direction will increase, and our capabilities for emigration will also increase. The only risk would be that nature's experiment with man might not succeed. Nature has made mistakes before, created forms that have been unable to survive. The dinosaurs may be an example. Man with his desire for knowledge, with his critical brain, with his self-awareness, is also an experiment that might be a dead end.

Things could go downhill if we begin to doubt ourselves, if we allow developments that are basically instinctive to come to a halt because we do not find any meaning in them. Our civilization could begin to rot from within. In that case nature will make new experiments with other forms, – but probably not on Earth, it may be too late for that. But we can hope that we will fulfill nature's demands.

Are we driving – or driven?

Many years ago, when I entered the space program with tremendous idealism, I used to see this power of nature to spread life as something of a religion – a matter of faith rather than provable evidence. Since it is a driving force upward toward higher goals and higher meaning, some people call this power God but that is an expression which came into existence because of the deficiencies of other explanations. I used to be unable to comprehend that anyone would question the validity of our thrust into the unknown. Today, I'm still no closer to a better understanding. All I see is the experts warning us of population explosion, resources depletion and "limits to growth," and at virtually the same instant in eternity, we have begun to venture into space . . . confound it! that can't be just coincidence!

I appreciate your concern about the questions of moral and ethics, Stewart, but I'm confident that our maturity will be commensurate to their challenges by the time we're there. I appreciate Wendell Berry's outcry, but I submit that the finitude he sees as basic requirements for a good character is a matter of individual viewpoint. It is relative. Man will always carry the disciplines of finitude with him/her, even into the far reaches of space, for it is precisely in the confrontation with the infinity of space that the realization of his own finitude will be thrust upon him.

With warmest regards,

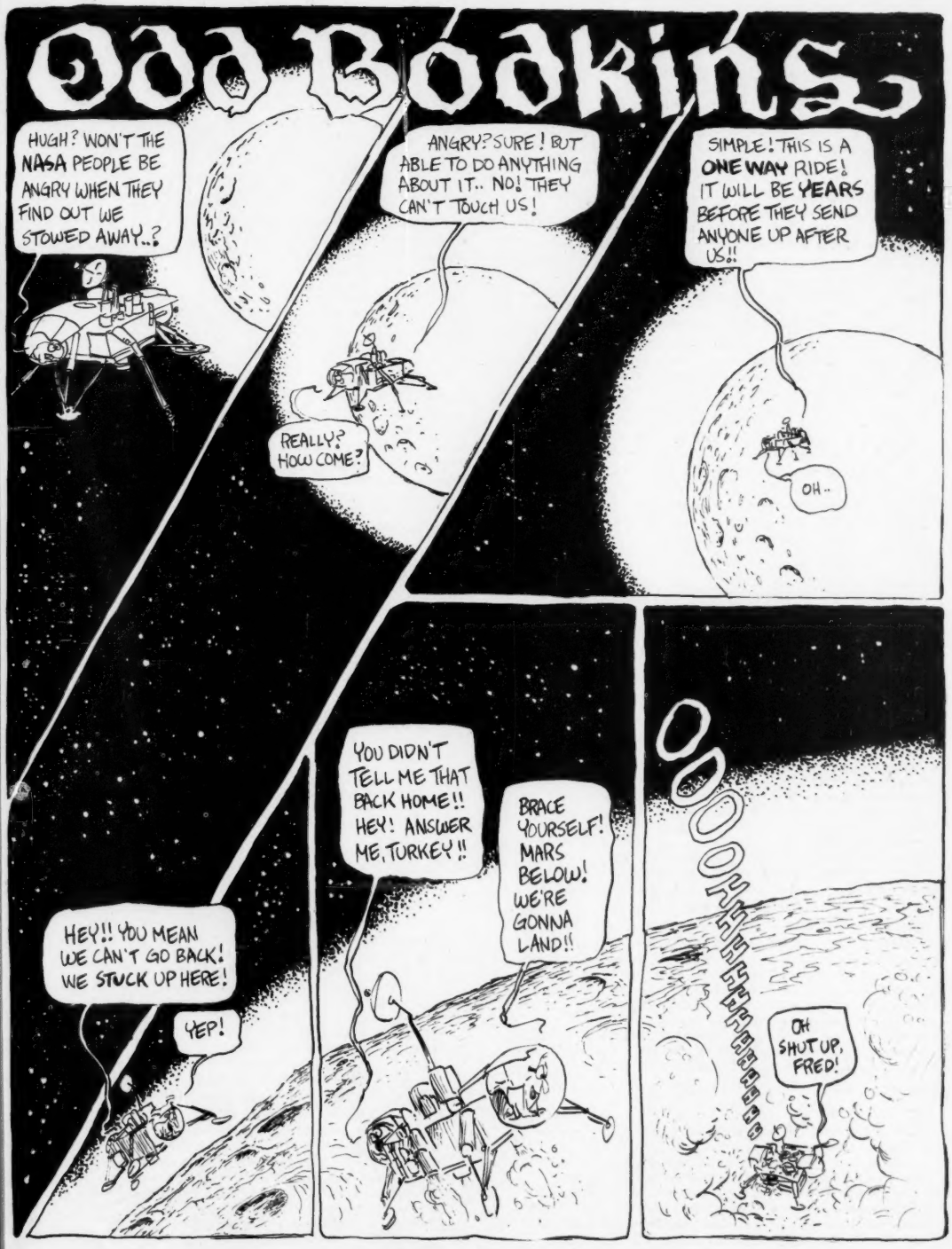
Jesco von Puttkamer
Advanced Programs, Office of Space Flight
National Aeronautics and Space Administration

John Holt on the case

Dear Stewart,

More space colony stuff. In recent issues of New Scientist there has been an exchange of letters among people who have been involved with magnetically supported (MAGLEV) vehicles in Great Britain. From these letters I get a very strong impression, which I am checking into, first, that they are making exceedingly slow progress in this field, secondly, that the magnetic suspension device is proving to be a great deal trickier to regulate than they had supposed, and thirdly, that they are beginning to have grave doubts, for reasons not yet clear to me, as to whether the linear induction motor will prove to be a feasible or workable propulsion unit for magnetically supported vehicles. One correspondent seemed to imply in his letter that now that they had finally realized that the LIM was not going to work, they could pursue more swiftly with other kinds of propulsion units. But, as I said, I don't know if this feeling is general, don't know what the bugs are in LIM that are causing trouble, and am inquiring further. I would offer as a very rough and ignorant guess the possibility that interactions between the very powerful magnetic fields needed for suspension and the equally powerful magnetic fields needed for propulsion might be causing difficulties – but this is no more than a guess.

[continued →]


Odd Bodkins
HUGH? WON'T THE NASA PEOPLE BE ANGRY WHEN THEY FIND OUT WE STOWED AWAY..?
ANGRY? SURE! BUT ABLE TO DO ANYTHING ABOUT IT.. NO! THEY CAN'T TOUCH US!
SIMPLE! THIS IS A ONE WAY RIDE! IT WILL BE YEARS BEFORE THEY SEND ANYONE UP AFTER US!!
REALLY? HOW COME?
OH..
HEY!! YOU MEAN WE CAN'T GO BACK! WE STUCK UP HERE!
YEP!
YOU DIDN'T TELL ME THAT BACK HOME!! HEY! ANSWER ME, TURKEY!!
BRACE YOURSELF! MARS BELOW! WE'RE GONNA LAND!!
OOOOHHHHHHHHHH
OH SHUT UP, FRED!

Dan O'Neill's customary four pages follow, syncopated with other Space argument.

In response to my letter, the man who is apparently at the head of MAGLEV experimentation for British Railways, who seem to be the leaders in this field now, said that the units they are now working with have an acceleration of 12%g. He went on to say that they feel this is about the largest force that will be comfortable for passengers. It is possible that for other applications the LIM might be able to generate much larger forces, and I am going to write him to ask if this is so. But at any rate, the models they have working, the current technology that O'Neill likes to talk about, is working at this level – which is a long way from 25g and 75g. . . .

I understand that O'Neill is definitely working on a book to be called **The High Frontier**. This means that I will certainly produce a book, following along the lines of my correspondence with you, but including still other things I haven't written about, showing this all up for the nonsense it is. I wish I didn't have to do it; frankly, there are other things I would rather work on, not least among them the cello. And I wish such a book could be written, indeed had been written, by people with some standing in the scientific community. But since they are obviously not going to do the job – my correspondence on this matter with the publisher of **Scientific American**, Gerard Piel, has been instructive – I guess I will have to. Along the way, I will certainly have something to say about an "educational system" which turns out people like this at its highest levels. . . .

I think that O'Neill and his backers are concealing many difficulties and dangers from us, and at the same time making their proposal look much easier and more attractive than it will be. It's not necessary to believe that they are scheming, cold-hearted villains to believe this – though I suspect there are a few such among their camp followers, and will be more as time goes on; indeed, one of the great dangers of that whole operation is that the cold-blooded schemers will before long displace the dreamers. O'Neill himself is best understood, I think, as a mixture of religious prophet and religious fanatic, and his movement is indeed a new religion. Like all new religions, it is an old religion in new guise, the old religion of Progress dressed up in new clothes. What O'Neill is basically saying to people is, "It's OK to worship the god Progress, it is a good God, our only mistake was to worship him on Earth, he doesn't live on Earth, he lives in Space, that's where we have to find him and worship him. So we can go right on back to believing in what we so happily believed in ten or fifteen years ago, infinitely more of everything. The only difference is that space, and not the Earth, will be our infinite supply of resources and our infinitely large trash can to put our junk in." This is an enormously attractive proposal to most contemporary people, for whom the loss of their belief in Progress had been traumatic. I think in saying all of this O'Neill is perfectly sincere. I think he really does believe that all of mankind's problems can be solved in space, and that out there we will discover all the good ways of living and behaving and treating each other that have eluded us here. For one who believes such things, the colonization of space must seem to be the ultimate Good Cause, as sacred as any religion, and to tell "white lies" in defense of this cause must not seem like any serious offense. Hence all this stuff about the blue skies, green trees, flowing rivers, earth-like environments out there – all of which I think even most of his supporters must realize are untrue. The problem, for them, is to get started, to get this cause moving, and if this turns out to be largely a problem of public relations, so be it. . . .

John Holt
Boston, Massachusetts

Space agriculture and Space cops

. . . We were talking on the phone about the problem of agriculture in space colonies, and the implications for the colony's internal policies. That is: would it be regarded as a robust system, difficult to damage, and hence compatible with human freedom and ordinary human cussedness? Or would it be regarded as being in a delicate balance, requiring close control over the populace to keep them from fucking it up?

I think I can define the core of our disagreement, or our reason for debate. In the **CQ**, you are accustomed to thinking in terms of natural systems, such as those of the New Alchemists, as promoting healthier human futures. You are accustomed to dealing with the question, "how can we make agriculture more nearly natural and organic, while still preserving reasonable yields?" You want your agriculture to not be energy intensive, or to require the support of advanced technology.

But in space colonization, we take a rather different approach. We want to maximize the yields, period. If we can do it with no advanced technology, fine; if with some advanced technology, fine; if with a lot of advanced technology, also fine. We expect to have at hand plenty of energy and lots of advanced methods, and in practice, the agricultural concepts showing greatest promise appear to be a super-hothouse system which is quite different from the Alkies' work. Instead of a complex interdependent organic web, we appear to envision a sequence of growing plants or animals, tied together with industrial chemical systems which are controllable with a computer. The CO_2, the oxygen, the fertilizer, the industrial processing of wastes – all these key features of the problem involve industrial plants rather than green plants.

As one who loves his Granola and his fruit straight from the tree, I can imagine your feelings at such a prospect. But in a larger sense, it represents a response to the space colony situation which is no less valid than the work of the Alkies in the context of their situation. The space colony will be heavily dependent upon advanced technology, rich in energy, rich in the materials which can be obtained from the Moon. Any system of agriculture, to be valid, must reflect these features.

The real question, then, is whether the humanness of the colonists is served or defeated by such a system. I would argue that it will be served. In our modern society, few need labor merely to win the ordinary creature comforts of life; our industrial technique makes it possible for most people to be free from constant concern for life's necessities. In that sense, they have the opportunity (whether they use it or not) to pursue life-styles which will enrich their sense of life. In the space colony, agricultural technology can easily produce such an abundance of food and other necessities as to leave the colonists entirely free from fear that they will come to mishaps. They thus can live in freedom and concern themselves with the possibilities of the High Frontier, rather than ceaselessly worrying that someone, by breaking the rules, will bring disaster to all.

In all this, you can clearly see my unspoken assumptions and attitudes toward technology, industrialization, and the like. Whether or not you share these with me, this is my point of view; and I would welcome an opportunity to present more material (specifically, the chapters in my book on the colony's agriculture, architecture, and social organizations) in **CQ**.

•

Dammit, Tom, you continue to miss my point and the point of this whole magazine. I got in an uproar when you said, "Agriculture in Space will be no different than a steel mill" because it's such an input-output abiological statement. Aesthetics aside (but not far, because there's no surer sign when you're off the path), no organism will be as docile as iron ore – not algae or bacteria or hybrid corn. They are complex systems with ideas of their own and require complex systems around them to stay alive. The level of complexity required is still outside human knowledge much less computer regulatability. No one has successfully maintained a terrarium or other isolated organic system for very long. Hydroponic greenhouses, etc. are richly linked with the rest of the Earth's biosphere. Ecosystem management is still a speculational science, like exobiology. What we do know about monocrops is that when they go down, they crash. And you're back to Space Sticks for food.

Anyway, continue . . .

–SB

[continued →]

WHY DID I LISTEN TO YOU? WHAT AM I DOING HERE?
..AS MY BOSWELL, YOU'LL BE FAMOUS!! GRAB YOUR NOTEPAPER AND PEN!! LET'S GO!!
EEP EEP BEEP BEEP BEEP BEEP BEEP
CHAPTER ONE: HUGH ON MARS! CHAPTER TWO: NOTHING HERE! LET'S GO BACK, HUGH.. CHAPTER THREE: MARS LOOKS LIKE THE BOTTOM END OF UTAH..
FRED! LOOK!
CHAPTER FOUR: HUGH DISCOVERS SINISTER TRACKS! FAITHFUL FRED FREAKS OUT!
FOOTPRINTS!!
FOOTPRINTS MEAN FEET ON MARS.. WHERE THERE ARE FEET, THERE IS LIFE!
NO! THERE'S NO ONE UP HERE! BEAT IT! SHOVE OFF! NO ONE HOME! GO AWAY!!
CHAPTER FIVE: NO ONE IS HERE! LET'S SPLIT!!
..SOMEONE SAID THAT.. OR SOMETHING!! AND I WANT TO MEET HIM, HER, OR IT!!
NO ONE SAID A THING! THIS IS A RECORDING!! BEEP! BEEP! BEEP! GO AWAY!!
CAN'T WE JUST TAKE WHAT-EVER-IT-IS AT ITS WORD THAT IT ISN'T THERE.. AND RUN!
COME ON OUT, MARTIAN! OR WE ARE COMING IN!!
NO! NO ONE IS HERE! BESIDES THE PLACE IS A MESS!!

[continued →]

Box 428, Sausalito, California 94965

On to my comments about "Apocalypse Juggernaut, hello."

The Aerospace Corporation is one of those military-industrial places around Los Angeles which grew up during the 1960's. It is distinguished by its display of full-size models of Air Force missiles, out in front; and these indicate its purpose for existence. Its main job is to provide advice to the military on new weapons systems. Once in a while, though, it does work for other agencies, such as NASA.

And so it was that some of the people at Aerospace recently carried out a study on the possible uses for large antennas in Earth orbit. Some of their suggestions were useful and valuable: wrist radios linked by satellite, electronic transmission of some types of mail, checking the location of packages of nuclear fuel. But quite a lot of their ideas gave Stewart Brand the unhappy feeling that 1984 might arrive right on schedule. These included: border surveillance; improved police communications; satellite monitoring of practically everything. So he wrote of his worries, in the article entitled "Apocalypse Juggernaut, hello."

Well, this is the kind of large-scale thinking that needs to be seen in perspective. True, the Aerospace proposals would envision a society very different than that of the U.S. today. But the significant thing is not that Aerospace has put forth its proposals. One can hardly expect them to have done otherwise. The significant thing is that even at this early stage, when the proposals are merely suggestions in a report, they are already being opened to the scrutiny and criticism of the public. It is no new thing that an Air Force contractor should propose to use space technology to turn the U.S. into a police state. It is a new thing that magazines like CQ should learn of these ideas, and criticize them, even before agencies of government can take the first steps to put them into practice.

After all, these suggestions are not official Federal policy, signed, sealed, and ready to roll. They are ideas in a report, and there is not a one of them which will ever fly without considerable support from the public. (Remember the SST.)

So let's look at Aerospace's laundry list and try to sort out the genuinely good ideas from the genuinely dumb ones. What uses for large satellites can genuinely help us?

The wrist-radio idea is an intriguing one. Even if it is literally possible to put a two-way radio in a wrist-size package, the tinny sound of the loudspeaker and the poor performance of its tiny microphone might well make it unpopular. But what is important here is the idea of making telephones portable, like CB radios. Imagine that your telephone, instead of being tied by wires into the Bell System, actually just runs off the wall current and communicates with a little antenna to a big satellite overhead. You could take it off the wall, power it from batteries, run it off the cigarette-lighter socket in your car.

All phone calls would go through the satellite, so a call halfway round the world would cost you no more than one next door. With thousands of channels on the satellite, any caller would have the convenience of today's system; there would be no need to call "Breaker, breaker" as in CB, with everyone listening in. The portable telephone would be as major a change as the hand-held computer; and it would probably be something with lots of benefits and few disadvantages. Already much long-distance phoning is carried by microwaves, beamed from tower to tower; this new development would merely complete that process.

But the business of automatically polling the public, or having them vote on issues through their portable phones, does not exactly sound like a good idea. If you want to arrange for Congressmen to sit in their offices and take calls, for free, from their constituents – that's one thing. It would sure beat having to have them go home every weekend. But to have the population polled – "Shall the tarriff bill pass? Shall Title VI of the Pickle-Pepper bill be adopted" – could only lead to a dangerous oversimplification of the issues. With all its faults, as Edmund Burke pointed out two centuries ago, there is much to be said for a system in which the public laws are written by representatives who maintain a general awareness of the public will, yet who have a necessary degree of independence of judgment.

The idea of locating things by satellite could be useful. Nuclear fuel, railroad cars, trucks of a nationwide road outfit, packages in transit – all would be very useful to be able to track and locate. Homeowners could put little transmitters inside their cars, or other valuable items, and these would be easily tracked if stolen. The problem is that if you can track the car that is stolen, you can also track the car that belongs to the man whose politics you don't like. But there is a solution. The tracking would be keyed to a code, a special string of numbers broadcast by the little transmitter. So what you want is to let the code be chosen by the user, and known only to him, and that it can be changed at will. Then, the police might track a certain code but would have no way of knowing whose it is – until the owner comes and tells them that it identifies his car which has been stolen.

Finally, there are some ideas which are just plain silly. The idea of making our borders super-tight (an electronic Berlin Wall?) is one. Apart from the fact that such an idea isn't exactly sporting – wetbacks are human, too – there's the question of whether this isn't the same old idiocy from the same geniuses in the Pentagon who gave us the "people sniffers" for Vietnam. The Vietnamese people foiled these by hanging bags of urine or feces near them. If Aerospace is proposing a new type of detector to discover the sound of footfalls, then it's easy to predict the Border Patrol will spend a lot of time chasing jackrabbits and coyotes.

In his article, Stewart Brand raised the question, "All that satellite monitoring means too much control; who is worried about that, who is thinking about limiting it? Who is concerned about protecting privacy or freedom?"

His question gives its own answer. He is concerned; so are his readers; so, in turn, will be much of the public when such matters are brought forth into open debate. It is not new that people should propose to regiment or survey the public at very intimate levels of their lives. What is new is the unprecedented public discussion such proposals now receive, even at the earliest stages of their genesis.

T. A. Heppenheimer
Center for Space Science
Fountain Valley, California

8am of the world

Keith Hensen of the L-5 Society sent us a talk by Peter Vajk that has some interesting points on the Space question. The talk was given at Southern Illinois University in April this year.

Let's consider again those remarkable Apollo photographs of the Earth. I have already remarked on the new perception of the Earth and the biosphere which these pictures have produced, but I want to call your attention to another new perception which is latent in these pictures. Once you see this, you can never again fail to see it.

The unity of Earth is prominent in this picture. But what's in the OTHER half of the picture? IT'S FULL OF SUNLIGHT! Space is not a pitch black void – every cubic meter is filled with solar energy. The next time you look at the Moon on a dark night, you will SEE that all the surrounding space is likewise illuminated. . . .

The old analogy in which the 5 billion years of the Earth's history to date is compressed into a single year, with all of recorded history happening in the last five minutes before midnight on December 31st, is perhaps deceptive, in that it suggests that we are rapidly approaching some imminent endpoint. If instead we take the past 5 billion years of the Earth's history together with the 10 billion years or so in the future that the Sun is expected to last, permitting survival of the Earth as a planet, and if we compress that 15 billion years into a single day, then it is now 8 o'clock in the morning, the biosphere has just woken up, and the workday is only beginning! . . .

The statement "We have only one Earth" is radically different in its implications from the assertion "We have only the Earth." The former recognizes the uniqueness and sacredness of the Earth and its biosphere among the other heavenly bodies; the latter denies the existence, for any practical purpose whatsoever, of the rest of the universe, and it seems, has now become as obsolete and outdated as the pre-Copernican view of the Earth as the Center of the Universe.

WE'RE COMING IN, MARTIAN.. READY OR NOT!!
GO AWAY, NIGHT TROJANS!
NOT READY! NO! NOT READY!
WE'RE FROM EARTH! HOW!
OH! EARTH! THAT'S DIFFERENT! I THOUGHT YOU WERE NIGHT TROJANS!
HOW DID I GET HERE?
WE LIKE EARTH PEOPLE.. WE BUILT THIS RECEIVER FROM THE PARTS SALVAGED FROM ONE OF YOUR CRASH LANDINGS A WHILE BACK.. BY LISTENING TO YOUR T.V. PROGRAMS WE HAVE LEARNED A LOT! BEFORE WE WERE EXPOSED TO YOU, WE WERE NOT AFRAID OF ANYTHING!!
REALLY?
UH OH
..WE WERE REALLY DUMB!
..WE ALWAYS THOUGHT WE WERE XLBMNIANS LIVING ON THE PLANET XLBMN.. WE DIDN'T KNOW WE WERE MARTIANS OF MARS.. SURROUNDED BY NIGHT TROJANS!!
NIGHT TROJANS?
I KNEW THERE WERE MONSTERS UP HERE..
WE NEVER KNEW WE WERE INFESTED WITH NIGHT TROJANS.. IT'S SO COLD AT NIGHT HERE WE JUST STAY IN .. HANG OUT IN THE CAVES.. BORING BUT WARM.. BUT NOW WE ARE SCARED!! WE DON'T EVEN GO OUT IN THE DAYTIME!! ONE OF THEM MIGHT STILL BE UP!!
MONSTERS ?
HMMM? I WONDER?
WE DO HAVE SOME HOPE.. ONE OF YOUR PRIME TIME SCIENTISTS SAID IT WOULDN'T BE IMPOSSIBLE TO CHANGE ALL OF OUR NIGHT TROJANS INTO SOMETHING CALLED OX GINS.. AND THEN ALL YOU EARTH TYPES COULD COME AND LIVE HERE BECAUSE THE AT-MOST-FEAR WOULD BE O.K.!!
NIGHT TROJANS.. AT-MOST-FEAR.. OX GINS.. OH HOPE NO!!!
COME! THE DAWN!
ONCE THE AT-MOST-FEAR.. WHATEVER THAT IS.. IS CHANGED TO OX GINS AND THE NIGHT TROJANS ARE KNOCKED OUT, ALL MARTIANS DEPENDENT ON NIGHT TROJANS WILL CROAK.. WHICH IS ALL RIGHT WITH ME!!
REALLY?
THIS DUDE IS REALLY THICK!
ANY MARTIAN WHO IS A FRIEND OF THOSE NIGHT TROJANS IS NO FRIEND OF MINE!
IF ONLY I HAD BROUGHT ALONG SOME BEADS..
..HANGING'S TOO GOOD FOR ANY MARTIAN WHO FOOLS AROUND WITH NIGHT TROJANS!
FRED! ARE YOU THINKING OF SOME SORT OF RIP OFF!?
NOT SOME SORT! THE RIPOFF!! WE ARE HERE! LOOK AROUND! REAL-ESTATE!! A LOT OF REAL ESTATE!!

[continued →]

Education for Space work

The following is reprinted from the August '76 National Space Institute Newsletter (membership $9/year for students, $15/year for adults, from 1911 N. Fort Meyer Dr., Suite 408, Arlington, VA 22209).

Many letters come to NSI asking what to study to break into a space-related career, and whether there will be more such work available in the future.

Comprehensive answers to the first question and implications for the second are contained in two volumes which NASA published last January, **Outlook for Space** and **A Forecast of Space Technology 1980-2000.** These present the careful, thorough conclusions of a two-year study conducted by a NASA team which conferred with many outsiders. The authors recognize two needs in a space program: to serve the physical requirements of humanity and immediate problems, and to challenge the mind. A zest for exploring the unknown is linked to national vitality. NSI members will cherish the latter point; letters reveal a straining toward the outer limits of space experience, but then NSI members are "the believers."

Outlook for Space urges that NASA, in its planning, be responsive to national needs. Future programs could elaborate on unique satellite services to the major concerns of food, energy, the understanding and protection of the environment, health care and such. Certainly the value of such programs can be generally appreciated, could bring NASA into more conversation with potential users of space, win support for more Earth-oriented programs . . . and so open more jobs.

According to NASA, the following five subjects will be at the heart of future technological developments, sure careers anywhere. (Incidentally, NASA is not the largest space employer; at the height of activity in the mid-1960's, 33,000 were on NASA payroll among the 500,000 believed involved in total space-related activity.)

1. Electromagnetic properties of solids.
2. Integrated circuit technology.
3. Cryogenics and superconductivity.
4. Microstructures
5. Coherent radiation and integrated optics technology.

Integrated optics is so new it is not even mentioned in **Physics in Perspective.** It means achieving in the optical region of the spectrum an analog of the present coherent microwave technology. According to Dr. John R. Pierce, Caltech, it offers the greatest advance in communications since the invention of the transistor.

The following organizations usually have career information to send:

American Institute of Aeronautics and Astronautics (AIAA)
1290 Avenue of the Americas
New York, NY 10019

Aerospace Industries Association of America, Inc.
1725 DeSales St. NW
Washington, DC 20036
Dr. Wayne R. Matson, Educational Services. Ask for the reprint, "Career Opportunities in the Space Program."

National Aerospace Education Association (NAEA)
806 15th St. NW, Room 338
Washington, DC 20005

NASA Education Programs Division,
Mail Code FE
Washington, DC 20546

The Engineers' Council for Professional Development
345 East 47th St.
New York, NY 10017
Sends lists of institutions for engineering or engineering technology study, those with aerospace departments noted.

NSI can send a list of universities teaching remote sensing, as for interpretation of Landsat images.

For orders to Government Printing Office:
NASA Outlook for Space, 3300-00640-3, $3.60;
Forecast of Space Technology, 3300-00641-1, $4.00
(GPO: Washington, DC 20402).

KEY SCIENCES FOR SPACE

Applied math (needed in more than half the following)

Thermodynamics
Atomic physics
Nuclear physics
Plasma physics
Fluid physics
Coherent radiation physics
Meteorology /atmospheric physics
Molecular physics
Solar Physics
Geophysics
Low temperature physics
Biophysics
Elementary particles
Macromolecules and polymers
Colloids
Superfluids
Thin films and membranes
Superconductivity
Lattice dynamics
Structure of solids
Surfaces and interfaces
Metallurgy
Thermodyn phase phenomena
Transport phenomena
Catalysis
Reaction kinetics
Radiation effects in solids
Organic chemistry
High temperature chemistry
Solution chemistry
Electrochemistry
Photochemistry
Biochemistry
Biology
Exobiology
Space medicine
Optics EM
Particle optics
Optical properties
Magnetic properties
Electricity and magnetism
General relativity and gravity
Cosmic rays
X-rays
Gamma rays
Ultraviolet
Visible /near infrared
Radio
Celestial mechanics
Astronomy
Planetology
Metrology
Ecology
Computer science
Information theory
Artificial intelligence

Satellite surveillance

The vast communications network that ticks off the passage of one person or coyote across a border, that can spot a field of marijuana in a Mexican mountain valley from 40 miles up, that can pick up a conversation whispered 10 blocks away — this network is a police construct. The information, after all, does not come back to you and me. It goes to Authority Central, where it is processed to make sure all movement is in conformance with The Law, which the police powers are authorized to uphold.

The question becomes: How much effort and money are we, as a society, willing to put into the perfection of the police function? Do we really want a border patrol that nabs every desperate farm hand, coke runner and laetrile dealer? Is such perfection desirable? Will it be worth the effort? . . .

If we assume that the earth is in the middle of a process of self-discovery, using the human consciousness (among others) to understand that it is a planet hanging in curved space, then this desire to know "every sparrow that falls" via electronic CNS extensions becomes natural. To take an evolutionary, deep-seated desire for knowing, which can deliver to the earth's total consciousness a sense of place and meaning, and give it over in its full power to police mentalities and authorities of whatever stripe, is to abuse it woefully. In other words, telemetry used to monitor manifestations of biological change (". . . emergence of daphnia in stagnant water in Quebec Province within the past two weeks has resulted in the largest sunfish fry count in history. . ." can lead to earth's improved self-understanding, or used to enforce some dimwit law can lead to increased authoritarianism. Humans are, finally, the bits of earth that leap up from the planet's surface, look around, tell what they see to each other, and die. The sum total of all this seeing and telling is the story of one planet waking up to itself. . . .

The voices of those who would give our best telemetry to the bug scientists and bio-dreamers are crushed under the magnitude of police communications. This is a cop world (as any evening of network television demonstrates so convincingly). But it won't be a cop world for long.

I personally am going to stop it. Cops are going back to loitering on streetcorners waiting to see a crime happen. Our ability to monitor everything is going to be given to scientists who have learned to use intuition, and so have developed a heart that feels for the earth. We will listen, not for the outlaw (who is only wresting himself or herself free) but for the cougar, so we will know how better to avoid it and leave it to its hunting. I personally will bring this about. I don't know how.

Jeff Cox
Organic Gardening
Emmaus, Pennsylvania

YOU'LL BE SORRY, NIGHT TROJANS, WHEN THE OX GINS GET HERE!!
FRED! I AM ASHAMED OF YOU!
..WHAT DOTH IT PROFIT AN EXPLORER TO GAIN A NEW WORLD AND SUFFER THE LOSS OF PROFIT!!?
ALL THE WAY WITH OX GINS!!
IT LOOKS LIKE I HAVE TO DO SOMETHING!!
MOVE OVER, CORTEZ! HERE COMES FRED!
..SIGN THIS DEED, JACKO.. AND I'LL GIVE YOU THIS BRAND NEW BALL POINT PEN FOR YOUR VERY OWN!!
WOW! A BALL POINT PEN!! GREAT! I'LL SIGN!!
WHAT'S A BALL POINT PEN!?
.. AND I KNOW JUST WHAT TO DO..
..A BALL POINT PEN? SON.. IT'S THE ONLY THING TO USE WHEN SIGNING AWAY YOUR RIGHTS AND POSSESSIONS! VERY MODERN! CHIC EVEN!
"X" HUH? JUST SIGN AN "X"?
FRED WAS RIGHT!! THERE ARE MONSTERS UP HERE!! US!!
CIVILIZATION IS REALLY COMING TO MARS, FRED?
FIRST..CONVICTS! THEN THE WHORES!! MISSIONARIES! WHISKEY!! GUNS!
..GOODBY TO THE BILLION DOLLAR PHONE CALL!!
WELL.. SO MUCH FOR THE AGE OF AQUARIUS..
O.K. KID.. NOW THAT I OWN THIS PLACE, LET'S GET TO WORK!!
GREAT! WHAT DOES "WORK" MEAN?
..AND ALL BECAUSE I SIGNED AN "X"! WOW!!
KID! ROCKEFELLAR WILL GIVE ME TEN BUCKS FOR EVERY NEGRO I LET LAND ON MARS!
IT'S OVER, FRED!! I BROKE THE VIKING!
YOUR FRIEND BROKE SOMETHING?
..HE SAVED ME THE TROUBLE.. I WAS GOING TO BREAK IT MYSELF.. ..MAKE THE BOYS DOWN HOME CURIOUS ENOUGH TO SEND A REPAIRMAN.. ..GET THIS DEED REGISTERED!
..HAS FRED GONE CRACKERS FROM THE THIN ATMOSPHERE? ..IS MARS (FRED'S PLACE) TO BE THE NEW VAN DIEMEN'S LAND? ..WILL ROCKY BUS US TO THE NEW UTAH?
TUNE IN NEXT ISSUE -
MELL

If the Sun Dies

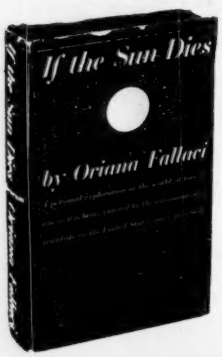
Philip Morrison, the peerless book reviewer for **Scientific American**, *suggested this book by handing his copy to me. "Read it."*

He's right. It's far the best book on space exploration, and I suspect it is Fallaci's best work. She addresses herself throughout to her father, who loathes Space, and reaches him through the experiences they shared in the Italian Resistance during the war. Unlike most American reporters she has an unashamed perception of heroism, and she is abundantly dubious of the freeze-dried delights of American culture.

It is thorough journalism. A year on the project (early, before the moon landing), she talked to the scientists, the engineers, the flacks, the astronauts especially, and to Ray Bradbury, who gave her the title. It's clear that the ones who weren't scared of her loved her and said unsayable things. (When I read Wally Schirra's remarks aloud to Rusty Schweickart, his response was "I don't believe it.") Fallaci finds herself liking Von Braun in spite of politics, and adoring Deke Slayton who personally bombed her in Florence and is stricken by that. Violating her every European instinct, Pete Conrad sells her on fast-food culture.

It's the chronicle of a conversion, reluctant, hard-fought, richly perceptive, convincing.

—SB
[Suggested by Philip Morrison]



If the Sun Dies
Oriana Fallaci
1965; 400 pp.
from
Atheneum Publishers
Out of Print
Try your library

"I love the Earth, do you understand? I love the leaves and the birds, the fish and the sea, the snow and the wind! And I love green and blue and all the colors and the smells, and that's all there is, do you understand? That's all we have, and I don't want to lose it on account of your rockets, do you understand?"

You grew white with anger. And your every muscle warned me to be quiet, not to go on with my nonsense. But I couldn't keep quiet any longer: it was as if a war, a gulf, had opened up between us. And I told you, though I don't know if these were my words, that I love the Earth too, Father. It's my home and I love it. But a home you can never leave isn't a home at all, it's a prison, and you have always told me that man isn't made to stay in prison, he's made to escape from it and too bad if he risks getting killed escaping.

•

"Don't pay any attention to people who tell you they have such a wild look because of tension, of exhaustion, of joy at having made it. It's go nothing to do with these things. It's rage at having come back to Earth. As if up there they're not only freed from weight, from the force of gravity, but from desires, affections, passions, ambitions, from the body. Do you know that for months John and Wally and Scott went around looking at the sky? You could speak to them and they didn't answer, you could touch them on the shoulder and they didn't notice: their only contact with the world was a dazed, absent, happy smile. They smiled at everything and everybody, and they were always tripping over things. They kept tripping over things because they never had their eyes on the ground."

"You seem to know them well," I exclaimed.

"Sure I know them well!" she said.

"What did you say your name was?" I persisted.

"I didn't say," she replied, amused. "My name's O'Hara. Dee O'Hara. I am the astronauts' nurse."

•

"We need art as we need dreams," Wally Schirra concluded.

"Dreams? Did you say dreams?"

"Without our dreams we wouldn't be where we are: dreaming of going to other planets, to other solar systems, and finding other Earths, our Earth, among billions of stars."

"Our Earth? Did you say our Earth?"

"Certainly. Because it's our Earth, it'll always be our Earth that we're looking for, it'll always be our Earth that we discover. I don't dream about the Moon. I know enough about the Moon to know how unpleasant and inhospitable it is. There's not one bit of Moon that's worth the Earth or that we could bring back to Earth as a trace of civilization. I don't dream about Mars. I know enough about Mars to know that you can't live there, you can't settle it. Mars and the Moon are two ugly islands. So then, you say, what's the point of going to them? The point is to be able to say I've been there, I've set foot on them and I can go further, to look for beautiful islands. . . .

•

Wally Schirra: Feeling weightless . . . I don't know, it's so many things together. A feeling of pride, of healthy solitude, of dignified freedom from everything that's dirty, sticky. You feel exquisitely comfortable, that's the word for it, exquisitely. . . You feel comfortable and you feel you have so much energy, such an urge to do things, such ability to do things. And you work well, yes, you think well, you move well, without sweat, without difficulty, as if the biblical curse *In the sweat of thy face and in sorrow* no longer exists. As if you've been born again."

•

We must be ready to meet an intelligence and a justice that are the fruits of different evolutions. For example, we must forget our principle of "Don't treat others as you wouldn't like to be treated yourself" or "Treat others as you would like to be treated" and establish instead a principle that says "Treat them as they would like to be treated." The first thing they want, seeing that they're alive, is to live; so we mustn't kill them, we mustn't land on their territory in such a way as to damage it, we mustn't go there at all if we aren't invited.

•

"Don't you pray?"

Pete Conrad scratched his anchor, revealed his wide-spaced teeth.

"Well, not in swimming pools. Nor in churches either. I mean, I don't go to church and all that. But as for believing, I believe just the same, we all believe, more or less, even those who say: I don't believe in a thing, neither Heaven nor Hell nor anything. But I'd like to see them when . . . Boy! At least three times I've nearly crashed and each time I commended myself to God like crazy. Those damn controls wouldn't be working one goddam bit and I'd pray to God, make them work, God! And you want to know something? I believe God helped me, that He made them work, those goddam controls that weren't working: because I was really going to crash. It's the same, you see, with the Moon. You fool around, you joke about it, but when you think about actually going to the Moon the first thing you do is ask God's help. Then the second thing is you thank Him."

"But what if He doesn't help?"

"Dammit! You thank Him anyway. It's good manners. If I ask you for a match and you don't give it to me, I thank you anyway, don't I? It's good manners. So I ask myself, why should I be polite to you and not to God?"

Astronomical Calendar

I'm afraid that this is going to sound like one of those bar bets, but if one was asked to name the best annual astronomy guide it would have to be Guy Ottewell's **Astronomical Calendar.**

It has only been around for three years so it hasn't yet received the attention that it should, but already it's replacing the Royal Astronomical Society of Canada's **Observer's Handbook.**

The **Calendar** *is published annually and contains all one wants to know and more about the coming events for the year. Guy himself does the cover illustration (15" x 11"), and produces, publishes and distributes the book himself. Somewhat like a Shakespearean play it seems to work on all levels: the casual amateur or the serious astronomer can read through it and find something to appreciate on every page.*

Guy has spent most of his life sleeping out of doors, and as a result the book lacks the cold detachment that turns one away from other similar books.

—Laurence Kent Sweeney

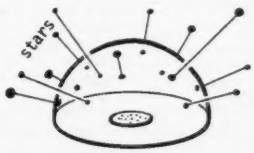
Space artists

A prisoner in Puerto Rico responds to Wendell Berry's doubts about excellent art and NASA having anything in common:

There were, to my knowledge, no great artists in Columbus' expedition to the Indies or in Byrd's to the Poles. Engineers and explorers go first, then engineers who are artists, then artists who are engineers, and finally artists who are solely artists.

Stephen G. Garrison
Campamento Correccional
Arecibo, Puerto Rico

An infinite half-space projected onto an imaginary hemisphere projected onto a flat map



OCTOBER
Solar System Diagram
constellation clues
Sky Map
CANCER
GEMINI
TAURUS
ARIES
PISCES
AQUARIUS
CAPRICORNUS
SAGITTARIUS
OPHIUCHUS
LIBRA
VIRGO
LEO
Capella
Rigel
Procyon
Sirius
Betelgeuse
Aldebaran
Pollux
Regulus
Spica
Arcturus
Antares
Vega
Altair
Deneb
Fomalhaut
Hamal
Alpheratz
Algenib
Markab
Schedar
Diphda
Mirfak
Rasalhague
Kochab
Alphecca
Dubhe
Merak
Polaris
Alioth
Mizar
Alkaid
Navi
Saiph
Rigel
Bellatrix
Betelgeuse
Alnilam
Alnitak
Mintaka
Sirius
Adhara
Procyon
Castor
Pollux
Alhena
Wezen
Aludra
Canopus
Suhail
Miaplacidus
Alphard
Regulus
Denebola
Algieba
Zosma
Chertan
Porrima
Vindemiatrix
Spica
Alkaid
Mizar
Alcor
Alioth
Dubhe
Merak
Phecda
Megrez
Gamma
Algenib
Alpheratz
Scheat
Markab
Enif
Sadalmelik
Fomalhaut
Deneb Kaitos
Diphda
Ankaa
Achernar
Rigel Kentaurus
Hadar
Acrux
Gacrux
Mimosa
Alphard
Regulus
Denebola
Algieba
Zosma
Chertan
Porrima
Vindemiatrix
Spica
Arcturus
Rasalhague
Kochab
Alphecca
Antares
Rasalgethi
Sabik
Eltanin
Rastaban
Etamin
Kaus Australis
Nunki
Ascella
Rukbat
Arkab Prior
Arkab Posterior
Sadalsuud
Sadalmelik
Skat
Deneb Algedi
Dabih
Nashira

MIND/BODY DUALISM CONFERENCE

POSITION PAPERS

Organized by Gregory Bateson and myself, a conference addressing the pathology of Cartesian mind/body dualism was held at the Wheelwright Center in Marin County, California, July 27th to 30th, 1976. Participants were Gregory Bateson, Francisco Varela, Heinz Von Foerster, Richard Baker-roshi, Ramon Margalef, Gordon Pask, Alan Kay, Terry Winograd, Mary Catherine Bateson, Steve Baer, Stewart Brand, Robert Edgar, and Carol Proudfoot. Below is Gregory's invitational paper, followed by three of the position papers. Portions of the proceedings and some more of the position papers will appear in later CQs.

–SB

Invitational Paper *by Gregory Bateson*

1. The human species, perhaps since the evolution of language, has attached strange importance to "spiritual," "mental," "moral," and even "supernatural" aspects or components of life and death.

2. It seems today, from the growth of scientific knowledge, that special concern with these matters is justified. Man's very nature, his relations with other men, and his "adaptation" to the biosphere of which he is a part are all affected and even determined by his deeply-held opinions regarding these matters. Even the most materialistic persons are influenced, by their very materialism, to treat others and the natural environment and themselves in special and peculiar ways.

3. Many branches of human knowledge and speculation combine to build up different facets of this problem. I have given the name "Mind-Body" to the aggregate of matters which I hope we shall discuss. But I hope that our deliberations will be shaped by an agreement at the start that at least the following list of topics is only a listing of synonyms – names of other ways of approaching the same central concern. "Evolutionary Theory" and "epistemology," "Mind-Body," "cybernetics," "ecology"; and, indeed, "theology" and "ethics" are labels for different paths which all lead to the same problematic mountain.

4. I hope also that we may agree at the start that the problematic nature of what we are to discuss has been grossly increased by those philosophies and religions which divide the mind from the body.

Equally to blame in this respect are those who would separate the Creator from the products of creation and those who would deny mental and spiritual characteristics to components of the biosphere other than man. Each of these positions proposes the same dualism, and I hope that the conference members will be able to agree at the start that the old compromises between "supernatural" religion and "materialist" science are artifacts of a false division and by-products of the meeting between unsophisticated theology and equally unsophisticated science.

5. I further hope that we may be agreed at the start upon certain characteristics of our subject of discourse:

a. That phenomena (percepts, events, data, injunctions, descriptions, etc.) are commonly linked together in recursive systems and/or subsystems.

b. That "energy" (a quantity, having dimensions MV^2, not itself patterned or differentiated) is commonly available in such systems to be "triggered" by events ("stimuli," "information," "causes," etc.) whose energetic content may be large or small, zero or negative.

c. That it is characteristic of the biosphere that the triggering events or variables are commonly differences. "Zero" differs from "positive" and therefore may trigger the freeing of stored energy. The epistemology – the way of knowing – which is characteristic of the sense organs of organisms is the way of sensing differences. By scanning (i.e., by moving the sense organ), comparisons are achieved, to create within the organism events in time, to stand for static differences existing outside it.

d. That "differences" of whatever sort (ratios, contrasts of shape, subtractive or additive differences, differences between external phenomena, differences between self and the outside, etc.) are always "at one remove" from the paired or multiple events in which they are immanent (but not localized). Differences thus precipitate "news of difference" and this "news" or information may be of various "levels" or "logical types." The map is not the territory and the rules of coding by which the map is made and by which it is "read" are not the map, etc.

e. Finally, the above four characteristics of our subject and sub-subjects of discourse apply both to that which we would investigate and to ourselves as investigators. A description of the behavior or anatomy of a living thing (say a starfish) should relate – be a bridge between –

Presently a teacher at the University of California, Santa Cruz, Gregory Bateson is author of **Steps to an Ecology of Mind** *(EPILOG, p. 453) and other turns in the path.*

–SB

Brand

Gregory Bateson

our way of knowing and the way of the system which we are describing. It is partly false to say that the starfish has "five" "arms," if there be no components to represent "five" and "arms" in that communication system which governs the morphogenesis of the beast – nor yet in that other which governs its behavior.

6. I suggest that these four fundamental points determine a ground from which we could start – I do not believe that these can be seriously doubted – though with a restructuring of such basic notions as "time," "space," and "causality," it is possible that the four points above will also require basic rephrasing.

7. There may be – perhaps must be – other points as basic as these. Perhaps our meeting will disclose one or more such points.

8. The nature of human epistemology is obscured – made difficult to describe – by the differentiation of mental functions within the brain. It is today fashionably (and I guess correctly) believed that at the level of the hemispheres there is a division of function such that it would be true perhaps to say that the R-hemisphere has typically a different epistemology from that of the L-hemisphere. I suppose that a human individual doing his/her best to integrate these differences must be expected to display different and perhaps idiosyncratic epistemologies according to how he/she achieves an integration. It is sometimes asserted that men and women achieve integration in different patterns of R/L integration.

Be that as it may, the R/L contrast has become woven into occidental notions about religion. Protestantism insists upon logical sense and asserts that the bread and wine stand for the Body and Blood. In Catholicism, the Eucharist is the Body and the Blood. The matter is more than semantic; the Protestants have, in fact, excluded from their church that hemisphere which is the more concerned with the stuff of religious feeling and concept.

This matter of hemispheric differences is, in many ways, relevant to our conference, but I hope we can avoid the fallacy which could equate R/L contrast with the dualisms of mind and body.

There is, however, one caveat which must be mentioned. I remarked above that to describe the starfish as "having five arms" may misrepresent the epistemology and coding of the message systems governing the morphogenesis and behavior of the animal. A similar caution is necessary when we try to translate from the coding of one hemisphere into the coding of the other. The interpretation of dreams is not a simple matter for the left hemisphere (supposing that dreams are preponderantly coined in the right brain).

There must be shared methods of coding and methods of integrating R and L. But crude translation of the thoughts of one hemisphere into thoughts appropriate to the other is not likely to coincide with the natural history of that particular brain.

9. About "miracles" – insofar as telling stories of "little things to be wondered at" tends to divide epistemology, splitting "mind" or "spirit" from "body," such stories will be regarded as irrelevant interruptions. Insofar as such stories enrich or modify a synthesis, they will be welcome.

10. Agenda: Very broadly, I hope that we shall do one or more of the following:

a. Add to the partial and tentative list of basic notions about the epistemological universe, especially that part of it called variously "creatura," "biosphere," etc.

b. Increase our understanding of what it means for aesthetics, ethics, action, philosophy, etc., to live in a world characterised by these basic generalizations and to be aware of these generalizations as they apply to the world and to ourselves.

c. Consider some of the peculiarities of process and relationship which accompany various epistemological views. We should consider both those experiences of culture, character formation and the like which promote particular sorts of epistemology and how the results of any particular epistemology are reflected in human relation, action, art, religion, humor, politics, exploitation, and the like.

d. Consider the self-validating character of all epistemologies. To what extent, by adopting a given epistemology, do we make that system "true" or "true for us"?

If we adopt a false epistemology, will we create, quickly or slowly, those circumstances which by their horror disprove our premises? Can horror disprove any proposition? Can truth generate horror? Can falsehood generate happiness and beauty?

Is sanity possible in a culture based on false premises?

Is epistemological conflict a species of double bind?

e. Consider the epistemological position of our culture in this Bicentennary Year of Our Lord.

f. Consider the means and processes of epistemological change. The defenses of the old and conventional epistemology and the weapons of the new. Epistemological leadership? Psychotheraphy? Religious conversion? Paradigmatic change in Kuhn's sense.

The creative aspects of the double bind?

Procedure:

1. No papers will be delivered at the conference. Each participant will, however, circulate a position paper, as brief as possible. Not more than two thousand words. This may be accompanied by printed material – e.g., published essays which the participant hopes the other participants will read before the conference.

2. Do read the position papers of your fellow participants. PLEASE.

3. The chair will see to it that every participant has his/her chance to open discussion of his/her views. (Those who write no position papers may be out of luck.)

4. The chair will be responsible for choosing the order in which matters are to be brought up and will try to aid each opener of discussion in maintaining the relevance of discussion while that opener has the floor. ■

INSIDE & OUTSIDE

BY RICHARD BAKER-ROSHI

I do not like to be always adding something to your reality, something unnecessary, by asking as we do in Zen – What is your/our reality? However all religions have some sense of another place where God lives, or another realm of spirit, of seeking, or understanding, some sense of a special state, grace or samadhi, some reference to something unaccountable. Religious people, more than other people, take into consideration the unaccountable. In fact doing so is very practical and useful. Things do not add up in the long run for people who do not leave some space for the unaccountable.

In religions, especially those from the Near and Far East, it is very common to hear, "Do not seek outside yourself!" But practically speaking, where is this "inside?" Where is this not-outside yourself? Commonly we do have some sense of this "inside." We often say, "Inside I feel such and such." But what does it mean?

We are inside this room. But actually there is not too much difference between inside here and outside there, except that the weather is somewhat modified. And outside "there" we are inside the bio-sphere, inside something. Most of you would say you are inside yourselves. But again what is inside there? Isn't it just flesh doubled back on itself? A kind of loop. Is inside someplace that we cannot reach, cannot get to, and outside some place we can reach, something accessible? Who is the we who reaches? What is accessibility? Is not everything reached by itself, so everything is already inside? Does accessibility deprive us of insides? Is anything actually accessible to other than itself?

But if you do put two things together something happens by their being together. (When are things not together?) Nagarjuna says that *a* plus *b* is not equal to *a & b*, but rather equals *c*, a third, something other than the simple sum of the first one and the second one. It is like a good camp or fireplace fire – with the logs together in a certain way you can create a great deal of heat in the spaces between the logs. This heat, or "third," or "*c*," is close to what we commonly mean by "inside." So I think we can understand "inside" to mean something that is more or other than the sum of two or more things in a particular conjunction, and something that is not enterable, or something that is privy only to itself. If you can enter, another outside or two insides are created. Is there only one outside – one big outside and many insides? Or is there no outside at all? How do we seek in what is not enterable?

Richard Baker-roshi has been Abbot of the San Francisco Zen Center since 1970, succeeding Shunryu Suzuki-roshi.

–SB

You know the story of Hui-neng, the Sixth Patriarch, and Shen-hsiu, the head monk under the Fifth Patriarch. The story has been an important teaching for many years, despite the likelihood that it is largely fabrication. Shen-hsiu was requested to demonstrate his understanding with a poem and he wrote the following:

> Our body is the Bodhi tree,
> Our mind a mirror bright.
> By polishing, from dust keep free
> And let no more alight.

When Suzuki-roshi was a boy, his teacher told him his mind should be like a mirror, just reflecting each thing as it comes. This is good advice for the beginning stages of practice. Let circumstances speak for themselves. You will be more patient and compassionate. As Dogen said, "To practice and confirm all things by conveying one's self to them is illusion; for all things to advance forward and practice and confirm the self is enlightenment."

You notice that your mirror distorts and obscures things quite a bit, and so you have to polish and clean your mirror in some way. You find that doing certain things leaves you feeling contaminated, uneasy or unclear. And then find by doing zazen you feel purified, washed clean, and through many simple situations learn that we do have to take care of things.

Across the street from here in the Neighborhood Foundation building there was an apartment of an alcoholic postman. He seems to have virtually never cleaned his apartment. Because of the health and fire danger the Neighborhood Foundation insisted that he clean it, and finally when he refused, the Neighborhood Foundation volunteered to clean it for him. In the end he seemed unable to face having anyone face his apartment, so he moved. Cleaning the apartment they found that in front of a broken refrigerator he had placed a new one that was already gaggingly full of spoiled food and covered in raised relief with cockroach eggs. He had replaced a couch with another in front of it too. The plaster was so filthy it fell off the walls when it was being cleaned. And under the trash on the floor we found disintegrating rats. It is surprising that more people do not live this way. It is obvious that if you do not polish your mirror, if you stop washing your face and picking up after yourself, things get very bad quickly. Our state of mind and life can deteriorate rapidly. The mayonnaise-like suspension of our life and culture can degenerate rapidly back into yolk and oil when personal or cultural credibility is gone.*

Baker-roshi is fond of the parable of mayonnaise. To whip it up you can start with one egg and some oil, and once it's going right you just keep adding oil. With one egg and sufficient whipping and oil you can fill a meditation hall with mayonnaise.

–SB

Baker-roshi

We feel the power of the outside world, the power of the illusion, (of the mayonnaise), and the necessity and need to take care of and maintain things at least minimally. But the concept of a mirror is not adequate for these subtleties. The mirror still poses an "outside" and a "who" that wipes it. However, the closer you look at the wiping of the mirror, to the illusion drawn by taking care of ourselves, presenting ourselves, the more the horizon of our imagined singularity recedes. We find ourselves in a world some physicists describe as "participatory reality." Which produces further questions like – are there gradations of participation, or are we always participating fully beyond choice or intention? Here we have gone beyond the mirror to mutual interdependence, or mutual interpenetration – immersion in the totality of details, in the preciseness and oneness of co-emergent minute reality. So the Sixth Patriarch answers Shen-Hsiu with the poem:

> There is no Bodhi-tree,
> Nor mirror to wipe.
> With all completely void,
> Where can dust alight?

In this poem the mirror itself is eliminated as a kind of dust, and the illusion of a "who" is wiped away.

Let me tell you a story about the priests Tao-wu (Dogo Enchi) and Chien-yuan paying a visit to a house where someone had died. As they came into the house Yuan knocked the coffin and said, "Alive or dead?" Wu answered, "I won't say alive, I won't say dead!" Yuan persisted, "Why won't you say?" Tao-wu answered, "I won't say, I won't say." This is not just a casual question, but a question in which Yuan was investing his own life, as is necessary if we are to realize these fundamental questions. Not knowing what to do, as they were walking home, he chased, continued to follow Wu's words and said, "Tell me right away, Teacher. If you do not, I'll hit you." Wu said, "You may hit me, but I won't say." There is a commentary at this point that to hit him is like making a notch in a boat to mark where you are in the water. But Yuan felt this question so strongly that he did hit Wu. This proved to be the pivotal question for Yuan and it turned his own investigation and his times with other teachers. Finally he was enlightened by it.

In his introduction to this Blue Cliff Records story, Yuan-wu (Engo) says, "Secure and intimate with the whole of reality, realization occurs right here. In contact with the flow, able to turn it about, you assume responsibility directly." The feeling here is not just that you are in the midst of the flow going with it, accepting it; but that you are so one with it that you are the flow itself. This is to show people a "continuous path in their home territory."

Intellectually it is pretty easy to see that Yuan was caught by the words and ideas, and was unable to let the coffin, the dead person, speak for itself. He had neither the patience nor the eye to allow circumstances to speak for themselves. This is one sense of the word samadhi "to receive correctly." Samadhi in this sense means that your mind is not full of assumptions and patterns but is able moment on moment to receive correctly.

Someone reminded me this morning how Catholicism uses, and how Brother David Steindl-Rast explained, the word "obedience" as meaning to listen completely. This meaning is contained in its etymology too. For example, because we do not, are unable to listen completely, in most of our political activity we are pushing a goal which has already been accomplished, beating a dead horse that may return to life because we will not leave it alone. The change has already occurred, but we are unable to see it. We do not have the patience to allow the change its own time because we want the change to occur for our anxiety or ego. The initial accurate push is usually made very quickly and only the alert can go on just as quickly to the next action. The mayonnaise, the flow, can be turned, changed very immediately when we realize it is in our own possession, and that all change occurs this way. But it seems to take nine years of wall-gazing or a century of fumbling to realize that fundamental changes or steps are possible and within our possession.

The same is true with people and every situation, we seldom realize the communication has been received, and we do not understand the person's and situation's own time. We do not like the idea of obedience, and obey has this interesting and common paradoxical turn, of meaning not just the ability to take orders, but also the ability to be responsive, to be free to love, to change the flow.

So although in the story Yuan did not obey actually, he was listening, he was open to move, he did not try to defend himself, he vulnerably chased Wu's words. He made himself a target. This is a kind of obedience, a willingness to go into something.

The commentary says that Wu, "met an error with an error, baring his heart completely." It also says, "He buys a hat to fit the head, kind-hearted as an old lady." Or, "when a dragon exhales a fog gathers." And, "the first arrow was light, but the second is deep," (I won't say, I won't say). This is how Chao-chou teaches too, a simple ordinary answer

that does not quite pass the time. Yuan was finally enlightened when overhearing a workman in a small temple chanting the Lotus Sutra, "to those who would attain salvation as monks, Buddha appears as a monk to expound the Dharma for them."

The next related story I want to tell you is about this Chao-chou (Joshu), one of the great Chinese Zen Masters, who although famous for his mild and ordinary way of teaching, they say his lips flashed light. One day, doing the morning sweeping, a monk said to him, "you are a man of knowledge, where does this dust come from?" Or it could be interpreted, "why are you not free of dust?" Chou answered, "It comes from outside." Here you can see his reputation for not setting up a solitary path, but for reaching people in their home territory. Chou just said it comes from outside. Then the monk said, "Why in such a clean and pure monastery, is there dust at all." Chou answered, "There goes another one." It seems the mirror and the "outside" are back. What happened to the Sixth Patriarch's understanding, his pointing out of the void?

Let's go back to zazen. When you are doing zazen and are able to simply follow your breathing, you will often find the quality of your inner space becomes more open with an increasing clear, permeating, blissfull feeling. But then you may become distracted and deeply buried in storyline thinking. Your state of mind will feel neutral or deteriorated and the spacious, intense, connected, and blissful feeling will be gone. It is almost as if that blissful feeling is too much for us. We are scared of it, or scared to relax our guard against the outside world. But then something will come to remind you to return to counting or following your breathing. But then where does that which reminds you come from? In fact, where does the storyline come from? The origin is very elusive. We can at least say the reminding reminded you. The breathing breathed you. Here again there is no mirror, no dust, no origin.

The Perfect Wisdom Sutra puts it, "The nature of all dharmas in its true reality is empty. It does not come nor go; it is not produced nor stopped. It is the same as the reality limit, it is the same as the true nature of Dharma, non-dual, not discriminated, like unto space. Therefore the skandhas, sense-fields, and elements are without self, and have non-existence for their mark. This is the perfection of wisdom which demonstrates to the Bodhisattvas the practice of the ten stages." And Nagarjuna, the outstanding logician of Buddhism, says, "Those of lesser insight who see only the existence and non-existence of things cannot perceive the wonderful quiescence of things."

There is another story about Joshu based on his being named for the city of Hoshu. Someone asked Joshu, "Where is the path?" Joshu said, "Outside the wall (or gate)." And then he was questioned again, "I was not asking about that path, where is the Great Way?" Joshu answered, "The main artery runs through the capital." This is the same outside/inside we have been talking about.

Another time Chao-chou was asked, "For a long time I have heard of the famous bridge of Chao-chou city, but now I find only a simple plank footbridge." Chou said, "Yes, you see the plank bridge and do not see the stone bridge." This response is to base yourself on the other's question, and the monk climbed on to the hook, "Where is the stone bridge?" Chou said, "Donkeys cross, horses cross."

The Sixth Patriarch is pointing out that everything is inside, that you are already in the inside – there is no mirror, there is no dust, etc. While Joshu is emphasizing that the outside which is already inside is entered by your intention – the inside is entering itself, that entering is a creative or co-emergent activity, privy unto itself. The outside then is a name for the past. The point ascribed to the Sixth Patriarch is the more philosophical or absolute point of view. While Joshu is emphasizing practice – how we enter this inside which cannot be entered from the outside. (Like the problem my Grandfather gave me when I was very young – to get up early enough to see the squigamumzee swallow itself. At that age pronouncing the word was a mouthful.)

Your hands are separate and joined, from their outside and their inside, and yet we tend not to notice that they are joined, that everything is joined, that your body is one big hand that drooped, or that the universe is a hand that drooped. So it is fundamental to practice to question what separate means, what kind of arrangement boundaries are. Dogen Zenji says that if you examine everything carefully you will see that everything shares a common life. Sangha is a distillation of this recognition.

This inside of which there is no outside is what Dogen Zenji means in Zenki by "inner dynamic activity." Getting your mojo working. At first, we enter in this way. The inner dynamic activity of practice is similar to when the logs of the fire are close enough to generate heat. Nagarjuna says, "Fire is not wood, nor is it in something else than wood. Fire does not contain wood. There is neither wood in fire, nor fire in wood." He points out that the relationship of any two concepts into a whole, for example fire and wood, entails a mutual denial of each other. He also says, "Nothing can be known apart from entity and non-entity, characterization or characteristics. This is also true of all elements – earth, fire, water, wind, and consciousness." In other words, he says, through conceptualization into existence and non-existence you can never reach real perception or understanding.

And Dogen says, "Firewood is firewood, and ash, ash; neither can turn back into the other. One should not take the view that it is ashes afterward and firewood before. Firewood is beyond before and after. Firewood and ash both have their own past, present, and future. Dogen also says, "When the Dharma is still not fully realized in man's body and mind, he thinks it is already sufficient. When the dharma is fully present in his body and mind, he thinks there is some insufficiency. The remaining virtue is always inexhaustible."

So from your simple breathing practice you begin to notice when your mind deteriorates and when it maintains a pure concentrated state, ready to accept everything. As your practice matures, in your whole life activity you will begin to see the manifestation of this inner dynamic activity as the matter of everything you do. In Dogen's words, "The total dynamic working is being activated by the manifestation." So you begin to know where the "capital city" is, where donkeys and horses cross.

We begin to have a sense of when the "inside" is there for us in the widest sense, and when we are trying to approach things from outside like Yajnadatta who thought he had lost his head when he looked into the back side of the mirror. As soon as you shift to seeing things from the outside, you notice again a kind of decay in your state of mind. This is what is meant by seeking things outside yourself, thinking an exclusive outside exists in which you can seek, not recognizing all conception as past. So to be secure and intimate with reality means to be in contact with this inside of which there is no outside. (There is nothing but entrance.) Depending on Buddhism or zazen is to seek outside yourself, to try to make a tile a jewel. But a tile is a tile, is a jewel. Hsuan-sha said, "The whole universe is one bright pearl." This is a deep understanding of causation. The fertility of two people being able to produce another person, of every joining producing a third. This is the creativity of our intention, of our concentration, of our manifestation of every moment. You yourself cover everything already.

There goes another one. ■

Brand

Ramon Margalef describing the role of energy in living systems.

Position Paper for the Mind/Body Dualism Conference

by Ramon Margalef

1. Personal Background. – Born 1919. Roman catholic culture, with a rather large dose of Mediterranean cynicism and skepticism. Ecologist, interested in field work. Accepts Einstein's dictum: *"Raffiniert ist der Herrgott, aber bosshaft ist es nicht,"* translated as: There are no reasons to believe that evolution has produced a human brain totally unable to understand nature and alien to it.

2. Relevance of biology. – Evolutionary thinking discovers the genetic unity between nature and man; ecology, the functional unity between man and nature. Organization always plays with continuum and discontinuum, as complementary aspects of nature. Trophic ecology deals with matter and energy, and cycling, and has to conform with thermodynamics. Demographic ecology deals with individuals that are born and die, as parcels of matter and energy with an history, and is game theory. In the fields of evolution and ecology I would substitute *"Le hasard et la necessité"* by "Gambling and thermodynamics."

3. Natural selection and knowledge. – Evolution is nor happiness neither truth, just survival, passing a filter. Ability to deal with the outside world must be subjected to selection. "Bumping the head against a tree" and things like that provide simple notions that have survived infinite occasions for falsification, both in the individual life and in the history of the species, and become accepted as basis of physical science. But natural filters may be much more subtle and complex, and the result is that the capacity for survival may take forms peculiar to particular situations of space and time, or social organization, and on a more critical examination cannot be accepted to build a general science. Ritual, religion, magic, are useful in synchronizing behaviour in animals, including perhaps man. In the survival of the species, hunger and sex have no more entity than the apparently most strange beliefs, and can go astray as well, if survival is anyways assured by other means, just as happens when there is a shift or relay in the controlling natural selection, for instance, as the result of the availability of large amounts of external energy in present mankind.

Why not to accept, without mental qualms, what is useful as a coordinating factor? Why ask for more criteria of "certainty?" Why to pretend that the reference in cybernetic behaviour must be something "real?" We are immensely free to drive our evolution, even to the point to choosing our "ideals" or cybernetic norms of reference, specially in the present time, when we have access to tremendous amounts of energy. But we resent this. I believe that sanity is possible in a culture based on false premises, if we choose to call false, forms of understanding and behaviour that allow survival and further exploration. To play with premises acknowledged false or uncertain is to accept some sort of "meta-reality." In life, exchange between subsystems, and conflict, is essential; evolution shifts from one conflict to next conflict, but does not lead to peaceful utopias. To be an active pessimist, as I am, is to be an optimist of sorts, into a larger frame of reference. I feel that there is too much mental masturbation in our culture. Perhaps we want and need to feel important.

Dissatisfaction, inside cultural inertia, is important, and like darwinian evolution, is creative, going further than simple adjustment to environment as postulated by lamarckism and social utopias. The world is full of security mechanisms against stagnation, from plate tectonics and DNA to conflict within us.

4. Information. – Information and culture are not free, they need a material substrate and energy. Information is something left or spared from a past degradation of energy (increase of entropy), in a form that can be recovered in making more efficient a further and more recent degradation of energy. The most general model of memory is as the asymmetrical interface between two subsystems in which degradation of energy and production of entropy go at different rates.

We sustain the illusion of being at the center of the world, as processors of information, and the world around flies apart to "feed" us. Probably the creation of a coherent culture needs the export of a lot of noise. And somebody else around can accept noise as information. There is a basic problem in the transmission of information between humans, because information increases more easily in the partner that has already more information. And this problem, and source of conflict, is easily coupled with different strategies in survival and reproduction (r-K).

The problems of exchange of information, mutual limitation of choice, and freedom, increase enormously in complexity when we pass from two to three partners. The "three body problem" is particularly intractable in physics. The "three persons games" makes much difficulty in game theory – and are the source of much literature and drama. Two partners can create a memory between. I and Thou is a natural way to simplify relations. But with three the difficulties are great. Nevertheless ecologists discuss and model happily interactions among many species and interconnected nets of relations. I feel that it is very difficult to understand the workings of a complex organization. ■

Ramon Margalef, from Barcelona, Spain, is the water ecologist whose extraordinary Perspectives in Ecological Theory *we excerpted in the Summer '75* CQ.

–SB

NOT ONE, NOT TWO

Position Paper for the Mind-Body Conference

BY FRANCISCO J. VARELA

This paper has two parts. In the "Notes on Dialectics" I develop some ideas that apply to dualities quite generally. In the "Epilog," I have stated my ideas on the Mind-Body Problem from the perspective taken in the notes.

Briefly stated, my feeling is that if there is going to be a change in our perception of the Mind-Body relation, there has to be a change in the context in which the problem is seen to arise. This implies, at least, a change

(i) in the logic used to understand that dialectics and wholes are;
(ii) in the scientific ideas about what mind is, (moving away from the brain-secretion image, towards an understanding of mind as conversational domain); and
(iii) in the cultural conceptions about mind, (which restrict the kind of experience that are socially and individually accessible).

Points (i) and (ii) are treated in the following Notes. In the Epilog, (iii) is considered separately.

I. NOTES ON DIALECTICS

0. The Star

0.1 One possible way of access to the central concern of our gathering is to consider duality and dialectics as a broad philosophical idea. Accordingly I would like to see us discussing trinities.

By trinity I mean the contemplation of the ways in which pairs (poles, extremes, modes, sides) are related and yet remain distinct.

0.2 The metaphorical "trinity" can then be replaced with some statement which contains a built-in injunction (heuristic, recipe, guidance) that can tell us how to go from duality to trinity.

*"trinity" = "the it/the process leading to it" (the Star * statement).*

0.2.1 The slash "/" in Star *, and hereinafter, is to be read as: "consider both sides of /", i.e:

"consider both the it and the process leading to it."

An active supporter of Allende in Chile, cybernetician Francisco Varela now works out of the Medical Center of the University of Colorado in Denver. Of all the mind/body position papers I think his has the most remarkable content. He appeared last issue in **The CQ** *with an interview called "Observing Natural Systems."*

–SB

Thus the slash is to be taken as a compact indication of a way of transiting to and fro both sides of it.

0.3 In the sections that follow I would like to show

(i) that the Star * is effective, i.e. it is a way to proceed from disjoint pairs to their unity in a metalevel, and;

(ii) that one can map (project, reformulate) in Star a number of dualities, the Mind-Body included, and;

(iii) that Star is (can be taken to be) a compact expression to signify a broad paradigm encompassing that series of convergencies rightly demanded by Bateson:

cybernetics ↔ epistemology ↔ evolution ↔ ethics ↔ cognition ↔ ecology

1. Star Cybernetics

1.1 The first aspect (i) of Star that I want to consider is the cybernetics contained in it. Let us transcribe Star into the more convenient form of

** = "network/trees constituting the network."*

1.2 This is pictured in Fig. 1. On one side (by convention the left) we see a network or mesh of interactions. These are left unspecified: the nodes could be anything at all (molecules, species, concepts, . . .), and their interconnecting arrows could be any processes whatsoever (computations, rearrangements, transformations, . . .).

1.2.1 It is assumed that any node could be seen (at another time, by somebody else) as another network, or that the initial net could be seen as a node in a larger net. That is: there are no initial or final "elements"; everywhere we look, everything has the same meshy appearance.

1.3 On the right side of Fig. 1 there is a tree of root *a* in which I have, step by step, drawn the nodes to which *a* connects, the nodes to which those nodes connect in turn, and so on. Had I continued to do this, I would have come back, after a while, to write *a* again. Thus the process could go on forever (whence the ". . .").

1.3.1 The stages of this procedure are conveniently tracked by 1,2,3, . . ., to indicate the successive depth of the tree.

1.4 The way to go from left to right in Fig. 1 is: chop (prune, truncate) at *a*. That is: take *a* as if it were an initial element, and proceed as if the time at which this is done is zero time. Please note that the act of chopping demands somebody who does it, and sometime to do it.

1.5 The way to go from right to left is more tricky, hence usually disregarded. If we go down the tree we would

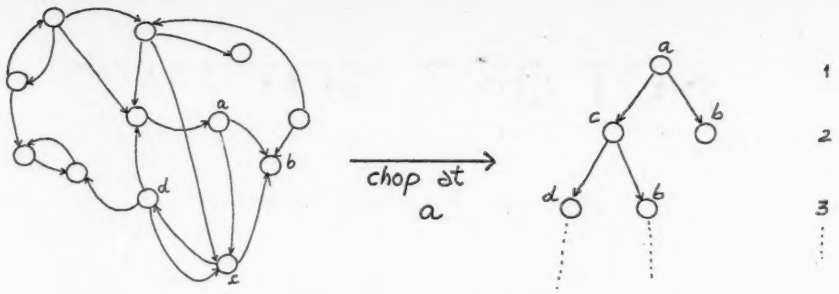


Figure 1

pass through the net components once and again, but this is never the initial net, it is still a tree branching and branching.

We can't get back to the initial net in time. So we must do it by eliminating time, i. e., in eternity. That is: we take this recursion in infinity (a limit process, a leap beyond the time-bound steps). The net re-appears as a fixed point (eigensolution) of this repetitive process. (Cf. Heinz's **Recursion Primer** [Von Foerster's position paper].)

1.5.1 Thus any finite, time-wise study of the net's tree is an approximation to the net as a totality. Example: consider the feedback circuit of Fig. 2. In the usual description of it, we start with some initial response $x(t_o)$, and then consider what happens at $x(t_o + \Delta t)$, and successively at $x(t_o + n\Delta t)$ (with Δt perhaps very "small," infinitesimal). This is depicted below in Fig. 2, in the series 1, 2, 3, ...

Consider now this series of cycles around the circuit in contrast with the entire circuit itself. Note first that from the completed circuit one can generate the infinite series of cycles by chopping it at x at some t_o, and taking some *b* as given. Note that this circling around and around will never be different from that; the total circuit will not appear. Thus at some time we stop, we have to stop. But if we take a limit through infinity the circuit is again closed. Thus what we actually do is an approximation, for as much time, and as close as we can get, to the simultaneity suggested in the graphic representation (it looks closed doesn't it?). But these two things are surely different. By contrast, the circuit's stability is a timeless property and can be taken as one possible description of the whole system, of its simultaneity, of its closure.

1.5.1.1 (Had I taken an example requiring a more abstract level of description [logic, set theory, algebra] we would be in deeper trouble than with the above circuit example.

This is because a full formal expression of the Star cybernetics requires a considerable re-formulation of logic and mathematics, which is, at present, only partly achieved. I do not think that details on this should be pursued at the conference. But I do think it is worthwhile to assess just how much potential for an epistemological earthquake have the ideas under consideration.)

1.6 Thus the net/tree duality is explicitly connected by processes in both directions. We make sense of the timeless (simultaneous) net by dealing with it in time, piecemeal. We make sense of the part-by-part approximation of the trees in the net by seeing how they lead to the stability of a simultaneous total system. Hence the pair net/trees is of the form Star *:

the it (the net)/the processes leading to it (the trees).

2. Varieties of Stars

2.1 The trinity net/trees is a somewhat formal expression of a more generally appealing Star:

whole/parts constituting the whole.

2.1.1 A whole is here a set of simultaneous interactions of parts (components, nodes, subsystems) which exhibit stability as a totality. The parts are the carriers of particular interactions which we can chop out from the whole and consider their participation in various sequential processes that constitute the whole. The whole re-emerges when we see the resulting total stability, (i.e., the fixed point of the limit process).

In other words, an equivalent Star, but a bit more operational is

stability/approximation in time.

2.2 Let us take this further, and reformulate a number of other dualities in this Star framework.

To this end take any situation (domain, process, entity, notion) which is holistic (total, closed, complete, full, stable, self-contained). Put it on the left side of the /. Put on the right side of it the corresponding processes (constituents, generators, dynamics).

For example:

being/becoming
space/time
reality/recipe
right intuitive/left logical
simultaneous/sequential
female/male
arithmetic/algebra
theorem/proof
analog/digital

environment/system
context/text
Nirvana/samsara
territory/map
semantics/syntax
topic/notion
enlightenment/neurosis
program/subroutines

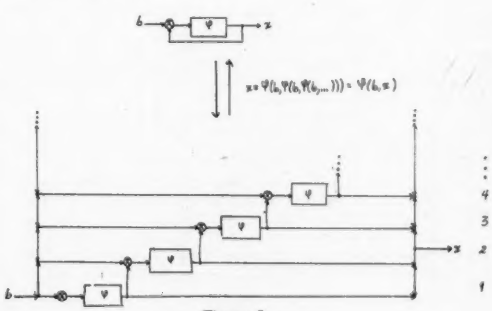


Figure 2

Box 428, Sausalito, California 94965

2.3 In each case the dual elements become effectively complementary: they mutually specify each other. There is no more duality in the sense that they are effectively related; we can contemplate these dual pairs from a metalevel where they become a cognitive unity, a second-order whole.

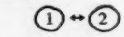
2.3.1 Note that this superation of duality is no "synthesis" (in the hegelian sense), since there is really nothing "new," but just a more direct appraisal of how things are put together and related.

2.3.1.1 (The closest I have come to finding a philosophical lineage of this view of dualities, is the Law of Three in the sufi tradition, or the buddhist doctrine of the middle way. There is in both a practice of balance, neglecting nothing, yet in the middle of whatever is going on. It should be more accurately be called the Law of Zero, since everything stays just the same.)

3. Evolution

3.1 I think that the previous sections signify a departure from the classic way of understanding dualities and, *a fortiori*, from the understanding of what dialectics is or should become.

3.1.1 In what I call the classic or hegelian paradigm, the notion of dualities is tied to the idea of polarity, a clash of opposites. Graphically:



3.1.1.1 The basic form of these kind of dualities is symmetry: both poles belong to the same level.

The nerve of the logic behind this dialectics is negation: all pairs are of the form *A/not-A* (e.g., *+/-*, *oppressor/oppressed*).

3.1.2 In our (shall we say) cybernetic or post-hegelian paradigm, dualities are adequately represented by imbrication of levels, where one term of the pair emerges from the other. Graphically:

3.1.2.1 Several paraphrases for what I want to say are the following:

Mythology: female gives birth to male which fertilizes female.
Cognition: intuitive understanding gives a ground for logical thinking which leads to intuitive understanding.
Cybernetics: a whole decomposes in parts which generate processes integrating the whole.
Formalism: a net chopped into trees that generate the net by infinite branching.

3.1.2.2 The basic form of these dualities is asymmetry: both terms extend across levels.

The nerve of the logic behind this dialectics is self-reference: pairs of the form: *it/processes leading to it*.

3.1.2.3 The notion of level, in the sense used above, is intended as a reference to the hierarchical arrangements of whole systems (strata of stability, levels of order), the chinese boxes of totalities in nature.

Let me try and be clear in the terminology here: for every system there is an environment which can (if we so decide) be looked at as a larger whole where the initial system participates. Since it would be impractical to do this at all times, we often chop out our system of interest, and put all the rest in the background as "environment." We are in the Star: *environment/system*. To do this on purpose is quite useful; to forget that we did so is quite dangerous.

Such hierarchies of imbricated systems give rise to the idea of increasing degrees of complexity. To be sure, my view of complexity is not yours. But given a certain view, a system's hierarchy is naturally associated to it. One such arrangement is in Fig. 3.

Let us agree to call a level any one step in this (or a similar) ladder of imbricated stabilities.

3.1.3 Pair of opposites are, of necessity, in the same level, and stay at the same level for as long as they are taken in opposition and contradiction. Their effective interactions are not (cannot be) specified.

Pairs of the form Star bridge across one level, and this crossing is operational. They mutually specify each other.

3.1.3.1 It is, of course, the case that when we look to natural systems, nowhere do we find opposition apart from our own projections of values. The pair predator/prey, say, does not operate as excluding opposites. Both generate a whole unity, their ecosystemic domain, where there is complementarity, mutual stabilization, and benefits in survival for both. So, although we can project values to the opposites predator/prey, the effective duality is a larger one, of Star form: *ecosystem/species interaction*.

3.1.3.2 We have in general the Interpretive Theorem:

> *For every hegelian pair of the form* a/not-A *there exists a more inclusive Star, where the apparent opposites are components of the right hand side.*

3.1.3.2.1 Another way of saying the same thing is: in hegelian dialectics dual interactions are of the zero-sum form: what one side gets the other side loses. The operational form of interactions seems almost universally to be of non-zero sum form: every participant can win (by playing the game of the whole).

It is, I suspect, only in a 19th century social science where the abstraction of the dialectics of opposites could have been concocted. Certainly it has been peculiar to man's social dynamics to generate interactions which operate as excluding opposites with a zero-sum strategy.

3.2 This view of dialectics has associated to it also a revised view of transformism, i.e., the understanding of system's changes. Star-effective dualities bridge across levels. But observe that movement across can take place in both directions: upwards or downwards in the hierarchy. This is interesting: there is a Star creeping in here.

3.2.1 Science in the west has preferred the ascending view of transformism, from simple components of the ladder upwards, man sitting on top. This is usually referred to as evolution, when taken in a loose, i.e., not strictly darwinian, sense. Traditional religions and folklore have taken by and large the descending view, from creator to creature, from complex to simpler. This is (shall we say) de-volution (manifestation, descent, creation).

Both views have been seen as incompatible in the history of the West, at least since the Renaissance.

3.2.1.1 The key difference between these two seemingly opposite views is time. Devolution is done in a jiffy; in fact, the whole ladder of systems must exist simultaneously for devolution to take place at all. Evolution, however, takes a long time to establish a new stable level.

It is only in a very low level of the hierarchy of systems that both evolution and devolution can be found in science parlance. I am thinking, of course, of devolution as the degradation tendency stated by the Second Law, which complements the small pockets of inhomogeneity out of fluctuations that make the emergence of stable units possible in the transformation of matter. Note that both directions are effectively complementary: homogeneity and fluctuation.

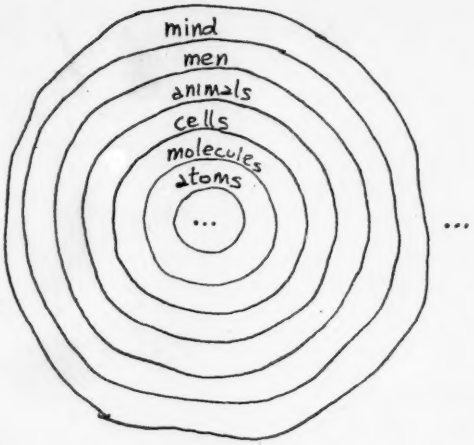


Figure 3

Note also that the time it takes, say, for a cell to be degraded is negligible compared to the time it took on earth to establish cells as viable.

3.2.2 These two views on transformism are, I submit, the components of a historical Star.

The religious tradition has emphasized the devolution side. Their approach is bent towards an intuitive and simultaneous mode of apprehending. In science, the emphasis is on the analytical, sequential mode, and hence evolution is favored. These contrast has been taken (is usually taken) as a hegelian pair.

But, as everybody practices, these are not effectively opposed views, but complementary modes, associated, I suppose, to the cognitive Star: *intuition/logic*. Correspondingly, there is something very gross about looking at science/religion (or materialism/idealism) as a hegelian pair which implies a preference for either evolutionary or devolutionary mechanism, e.g., Darwin vs. Bible, Marx vs. Hegel.

Maybe there is a way to suture this gap within the Star framework. This means replacing the apparent pair of opposites by a more inclusive Star which contains them as parts of the processes. Accordingly, I propose to view the hierarchy of systems as containing bi-directional processes of evolution and devolution for crossing levels, complementing each other in the specification and constitution of the hierarchy as a unity, as the totality-of-what-there-is (gasp!), as Reality. In other words there is an ultimate, or Universal Star:

Reality/levels of reality.

From this bi-volutionary point of view nothing really goes anywhere, there is just shuffling and re-shuffling of the stuff through levels of stability, the net result being null.

3.2.2.1 It is apparent that this bi-directional view of transformism lends itself to various sorts of religious analogies. So much the better. But I am proposing it also in all seriousness as a valid paradigm for a perfectly scientific improvement on our ideas on evolution, which seem to be too one-sided, and are stumbling blocks when it comes to studying things like mind's ecologies. To be sure, this proposal needs much, much refinement and thought to become a workable hypothesis. I propose to discuss this at the Conference.

4. Epistemology

4.1 Let us come back to us, observers and cognizers, the systems that do descriptions of wholes and systems.

We must turn to a characterization of what it means to participate in a cognitive act to see what is the epistemological ground we are trodding into.

4.1.1 Three main properties (at least) characterize an observer:

(i) capacity for indication: to decide boundaries, to come up with nodes, systems, to have criteria for stability.

(ii) capacity for time: to chop a net and start a sequence, to compute through a process, to approximate the stability of a whole.

(iii) capacity for agreement: to externalize, to synchronize with other observers, to re-produce other's distinctions and follow corresponding time patterns.

Let us call an observer anything possessing these properties. I am taking a conscious mind to be characterizable, for the present purpose, as observer-able.

4.2 For an observer is necessarily the case that whatever he describes (sees, perceives, understands) is a reflection of his actions (perceptions, properties, organization). There is a mutual reflection between described and describer. They are mutually revealing.

Now, here again creeps up the hegelian temptation to take these terms as opposing dualities, i.e.,

observer/observed – describer/described – subject/object

It is very obvious, however, that these poles are not effectively opposed, but rather moments of a larger whole which sits in a metalevel with respect to both terms; it's time to apply the Interpretive Theorem to this hegelian pair.

4.2.1 For me the best way to make sense of this encompassing whole of the terms subject/object is to take really in all seriousness Bateson and Pask's insistence that the notion of a conversational domain is quite crucial.

Species interaction achieving a stable ecosystem can be thought of as the biological paradigm for a conversational domain. Evolution is then the changing theme of the conversation between species and environment.

But the idea of a conversational domain goes further in that all cognitive interactions can be similarly treated, as participants engaged in a dialogue, whether we enter in interactions with ourselves, with each other, with nature, society or what have you.

4.2.1.1 This relates to 3.1.2.3. For every system there is a larger whole which it integrates, to which it contributes for its stability, and from which it receives constraints. All I am adding now to this idea is that such interactions between a whole and its constituents systems, are, when we take the perspective of one of the systems, neatly expressed as conversational domain. Specially at the biological and social level. In this sense, the domain of interactions of a system is well captured as carrying a semiotic value with respect to the system's organization.

4.2.1.2 In the net that embodies a conversational domain there are stable patterns and relations that constitute units of observable behavior. It is to this level that the whole constituted by subject and object participants belongs to. Bateson has referred to this whole as message-in-the-circuit. I prefer to avoid a word such as message; all I want to denote is a stable process of interactions. For lack of another term, let me call this a conversational pattern: a fixed point in the infinite recursion of interactions between a set of participants. The hegelian subject/object becomes then part of the right hand side of the Star:

conversational pattern/
participants of the conversation

[more →]

We are participants in the quite large conversational domain of the biosphere. And all we have said before about the complementarity of a whole's parts applies in particular here for us (pairs of subjects, objects) as participants of this specific whole, the biosphere.

4.2.1.3 As with the idea of bi-directionality in transformism, I believe the notion of the biosphere as a conversational domain, the conversational patterns that can arise from it and the dynamics which regulates these exchanges, all lead to various mystical correlations. But again, I intend them also as a scientific construct that should become workable provided that we do something with it. This is one other major point that I would like to see us discussing at the conference.

4.2.2 In this context, the mind-body duality is just one form of the above Star, that is:

mind(conversational pattern)/
bodies (processors of the participants).

4.2.2.1 It is quite interesting to consider this *Star mind/bodies* at the light of bi-volution. On the one hand is the evolutionary direction of the development of brains capable of subtle properties to establish a conversational domain of the complexity of mind. This is the puzzle that psychobiology confronts explicity.

But consider now the devolutionary direction. It means that there is a dispersive tendency for the participants in these conversational patterns to chop themselves out, to detach from the wholes and become isolated, rigid participants. This is equivalent to Heinz's Principle of Cognitive Homeostasis:

The nervous system is organized so as to compute a stable reality.

In other words, the capacity for conversation makes it possible for bodies to constitute the mind-conversational domain. The biological stability makes it necessary for these bodies to attach to a particular construction (a particular behavior) the value of the whole, and thus to become isolated and identified with one participant or subject. Conversation becomes monologue; the Star *mind/bodies* becomes the hegelian: *my mind/my body*. This can equally well be described in terms of the stabilization of belief systems, of psycho-pathological notions of neurosis, (or of religious ideas on the downfall of man for that matter).

5. Paradigm

5.1 I have addressed the central concern of this conference via the study of dualities, and the notion of dialectics as an encompassing philosophy. This choice is quite harmless. As we saw, conversation theory, cognition, cybernetics, evolution and ecology, would all lead to the same central concern.

And just what is this central concern? I take it to be a paradigmatic shift, in the strict kuhnian sense. At the core of it is the sense of having, not only an understanding of nature, but side by side to it the process through which this understanding was arrived at. There is in this paradigm a strong sense of the observer coming to the foreground, a concern with man's capacity for reality rather than particular forms of realities. The form of this paradigm cannot be formulated precisely. I have tried to give a token expression of it in the Star * Statement. Alternatives? Can we formulate more precisely the research programmes implicit in this paradigm?

There are very many implications of this view of science and rationality for individual and collective action. At the center is the explicit recognition of responsibility for what it is seen and understood, inescapably reflected by what is that we have decided to see and understand. In particular (and by a simple consequence of Ashby's Law of Requisite Variety) this paradigm brings out the need of limits in many spheres of human life, as Illich has presented so forcefully. In particular, it leads me to see that there cannot be a distinction between the external and the internal front of political action.

Does this mean that this view of science and rationality we are moving to, is closer to earth and basic sanity? Riddles, riddles, riddles, . . . (the Sphinx giggles in the fading background).

II. EPILOG ON THE MIND-BODY PROBLEM

In the preceding notes I have stated two departures from the traditional views which bear upon the Mind-Body relation. In terms of what I said in the introduction, I have proposed a change in

(i) the logic with which to consider dualities and dialectics; and

(ii) the (scientific) model of mind required to encompass what the phenomenology of mind is, away from the brain-enclosed private talk to a conversational domain idea, where mind is distributed to the stable interactions occurring in the biosphere.

To what extent this touches on the traditional or philosophical view of the Mind-Body Problem (MBP)? This epilog tries to take up that question, i.e., I am allowing myself some table-talk about it.

First of all let me state more closely in what sense do I still see a problem here. The crux of the matter is the fact that there is an asymmetry between the consideration of other's minds and the consideration of my mind. Other's minds can be accounted for in some descriptive, nomological paradigm (i.e., our choice of a conversational pattern or what have you). My mind is still a different affair which is not exhausted by that description; there is a residue left, a remnant that we may call the experience of the mind, the sense of self. Interestingly enough, both the analytic tradition (i.e., Feigl and followers) and the phenomenological tradition (i.e., Merleau-Ponty) agree on this point. As long as there is such a remnant in the mind's description of minds, this sense of self that evades any descriptive net, the Mind-Body relation is still a problem.

Nothing that we have said before really illuminates this central core of the MBP. In fact, nowhere have we talked about the experience of having a mind. I intend to do so now from the perspective taken in the Notes.

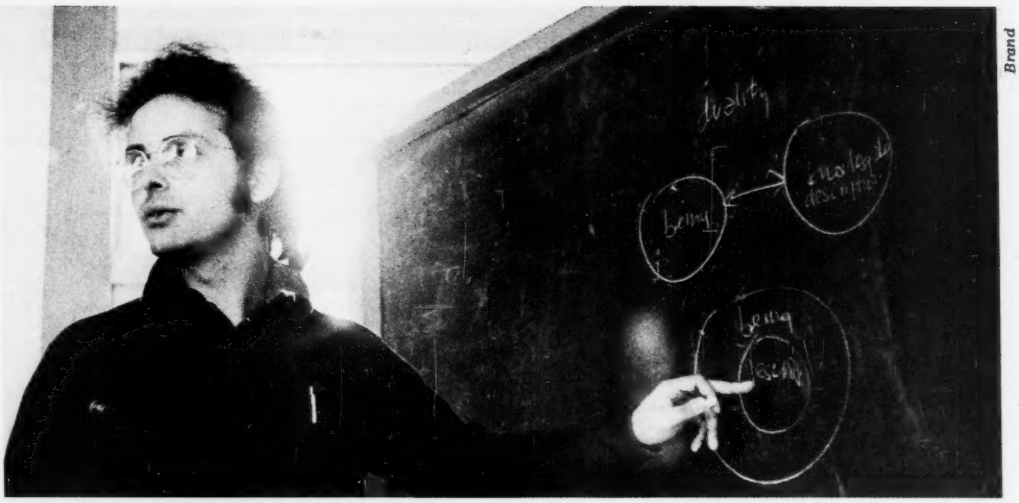
Before even considering what is the content of any experience of self, let me point out that here again we have to apply our Star telescope. In fact, whenever a distinction is made between experience and description, these two are put in the poles of a hegelian pair. I submit that the distinction should be made, but that both sides belong to most interesting Star which I want to phrase as

being/knowledge

By being here I mean, for the purpose of this discussion, the same as experience, sense-of-self or direct-knowledge. By knowledge I mean the same as description, nomological net, logical discourse. I take it that this Star is closely related to two other stars we have mentioned before

intuition/rational –
simultaneous/sequential

In other words, and again for the present purposes only, the qualities of being can be thought of as perceived by intuition better than by discourse, and in a simultaneous whole, rather than in piecemeal approximation in time. I also take it that being should be on the left side of the Star, insofar as introspection says that it is out of this background of being that thought occurs, it is the archipelago of ideas in the giant sea



Brand

Francisco Varela

of feeling and experience. Similarly I assumed that intuition is the earth from which discourse can be built, and to where it eventually returns.

So much for the general characterization of what I mean by this Star: *being/knowledge*. Note now that knowledge is habitually represented as much more corrigible than being. Effectively however, it is the case that both sides mutually specify each other and that every knowledge requires a certain level of experience and viceversa. In other words there is necessary balance (stability, complementarity) in this Star (just like in any other Star). My claim is that it is this balance which is the key to a fresh understanding of the M-B relation.

In other words, if we represent mind as conversational pattern, this does not mean that there is a corresponding experience of this larger whole; experience is usually kept at the subject side of the computations in a conversational pattern. (Accordingly, those who favor the so-called Identity Theory of Mind-Body relations search for neural states that could be related to consciousness).

I am landing flat on my face in a very delicate domain to talk about: the transformations and unfoldments of human experience. My view is this: if we are to have an understanding of mind from the point of view expressed here (cf. also Bateson and Pask), and if this is going to be a viable alternative, this knowledge has to balance with a corresponding being. As long as we experience us mainly as individuality, this knowledge is not forthcoming, or I do not believe it will be fruitful. Now, religious traditions have always emphasized the idea of a conscious evolution, of a human unfoldment. Translated: an expansion of experience, a redressing of the balance between knowledge and being. Traditions in the east have accumulated subtle know-hows to further such transformations in experience.

Now, it is an axiom that we can only experience what corresponds to our organization; we do not have the experience of being submarine holothurians. But how on earth can we comprehend this agility of experience to expand to the metalevel and encompass what seems transpersonal? I pass on this one. Yet I cannot but take as consistent the fact, that socially so many different cultures, and individually by so many routes, these leaps of experience can occur and are quite isomorphic. In other words I am assuming that mind as the unity of the conversational domain of the biosphere, (i.e., mind-at-large, or mind proper) can be experienced, and further, that more or less all of us have experienced it.

The obstacle to be surmounted in this process is nothing less than the cognitive homeostasis of each of us, the tendency to stick with our interpretation of reality, entrenched and made stable by emotions and body patterns. To work through this veil of attachments, and to see (experience) reality without them is part of the process of unfoldement. I will not elaborate on this more. Hopefully at the conference others will be more articulate than me about this point. But what I see as an important ingredient of our discussion is the fact that a change in experience (being) is as necessary as change in understanding if any suturing the mind-body dualisms is to come about. I also believe the knowledge part can come about more easily.

This correspondence between knowledge and being should be (naturally is) part of the rational paradigm we are considering. In this, the proposed paradigm is quite unique: it contains a limit for itself by containing its being-balance; at a point the description can only become a speechless finger containing, rationally, the complement of its rationality.

To conclude:

The MBP is no pseudo-problem at all. As it is currently conceived, I see it as having

(i) a component which can be improved on and done away with; and
(ii) an irreducible basis.

The irreducible basis is the complementarity being/knowledge, inextricably bound to existence. (I refuse to comment more on this.)

The part of Mind-Body Problem that can be improved on is

(a) the compulsion to consider this Star: *Mind/Body*, as a hegelian pair, and thus to view Mind and Body as opposing qualities;

(b) the compulsion to see mind as tied to only one side (subject) of a larger computation, constituting a conversational domain.

The last two points we can really work on and deepen our understanding. To bring about a corresponding experience is another matter. ■

The case FOR Mind/Body dualism

Dear Mr. Brand:
I notice in the latest CQ that you're holding a meeting to "formally dissolve the mind-body dualism" of Western culture. I'm writing to wish you luck, but also to indicate why I don't think you'll succeed. While it is true that for most practical purposes mind is body, and it's important for people to learn this, both human experience and recent scientific evidence indicate very strongly that mind is something else that is at least semi-independent if not capable of being fully independent of body.

I've been into humanistic psychology for a long time and put a lot of effort in my humanistic psychology course, letting the students get a feel for just how strongly their body affects their mental processes. It's easy to demonstrate with simple exercises like letting people walk around in a slumped posture and seeing how easy it is to feel depressed and how difficult it is to feel happy. There they see that while bodily posture does not totally determine mental processes, it certainly has a strong effect on them. Other exercises can demonstrate this even more strongly. The typical Western attitude of regarding yourself as some kind of "higher" intellect, with your body as a convenient servo-mechanism to move you from place to place, is clearly pathological, since it cuts you off from a highly important reality. As a day to day practical operating philosophy for dealing with your life, typical Western dualism is lousy.

In terms of a conceptual system that more adequately reflects reality, however, a strong case can be made for dualism. I'll briefly mention three lines of evidence. First, the direct experience of many people is that they have temporarily been in contact with things at a distance when our physicalistic view of the world says this couldn't be, and some have even had what is technically termed an out-of-the-body experience, where they temporarily experience themselves as being in another place than where their physical body is and yet feel a state of full, normal consciousness, not in some kind of dreamlike or pathological state. To those committed to a physicalistic philosophy, these kinds of experiences would most often be rejected a priori as due to hallucination, faulty memory, just plain lying, etc. To the people who have an out-of-the-body experience, however, the almost universal reaction is an absolute conviction that some part of them will survive bodily death, as they have experienced a functioning outside their physical body. Direct experience carries a lot more weight here than any kind of logic does. Some of these people also describe events at a distance which can be verified, and which they couldn't have known about normally.

The experience of perceptions at a distance and the like led to the scientific study of them by very small number of scientists, and today we do have a field of science called parapsychology, although, again, its findings are ignored by most orthodox scientists. Under laboratory conditions it has been shown beyond any reasonable doubt that occasionally people can pick up the thoughts of others (telepathy), get information about purely physical events that they are sensorially shielded from (clairvoyance), accurately predict the future when it can't be inferred from a knowledge of present events (precognition), and sometimes influence physical events, such as the fall of dice simply by wishing for a certain outcome (psychokinesis). All four of these basic phenomena seem incompatible with our current physicalistic world view, the same world view from which we ordinarily argue that mind must be totally reducible to electrical and chemical events within the brain, nervous system, and body. Thus they serve as a very good reminder that our present scientific ideas of the universe are very good theories for dealing with some aspects of reality, but hardly complete.

It took many years before parapsychologists were satisfied enough with the evidence of the four basic phenomena mentioned above, under stringent conditions, to start branching out again into the more exotic experiences like the out-of-the-body experience, but we have started and gotten interesting results. I began the trend back in 1968 by publishing an article, "A Psychophysiological Study of Out Out-of-the-Body Experiences in a Selected Subject," in the Journal of the American Society for Psychical Research.

I had met a young woman who regularly (once a week or so) experienced waking up during the night and finding herself floating above her body, near the ceiling. To make a long story short, she spent several nights in my sleep laboratory and showed a unique brain wave pattern while having these out-of-the-body experiences. I also wanted to check the reality of it, so each night I would put a different five-digit random number on a shelf up near the ceiling, readily visible from the ceiling, but not at all visible from down in the room. On the one occasion when she claimed to have been in the right position to see the number and memorize it, she correctly got it: with 100,000 to 1 odds, it argues pretty strongly that something was going on.

My own studies of transpersonal psychology, altered states of consciousness, and parapsychology have made me think that the best concept so far is that basic awareness may very well be of some "non-physical" (in terms of current physics) nature, but we very seldom have a direct contact with this direct awareness. Rather, we know the wholistic result of this basic awareness intimately merging, interacting with, transforming, and being transformed by the hardware of the brain, nervous system, and body. Some of these kinds of interaction in terms of altered states of consciousness are discussed in my recent books, **Transpersonal Psychologies** (Harper and Row, 1975) and **States of Consciousness** (Dutton, 1975), although I concentrate on the more "orthodox" side of things there as I don't want to scare off conventional scientists right away by pushing their buttons. On a personal level, I keep up my aikido training and other kinds of body awareness training, but my research work makes me more and more question our conventional notions of space, time, and body.

Again, good luck on your Conference. But until we begin to take these kinds of human experiences and the data of modern parapsychology into account, I don't think we'll do any more with the mind-body problem than talk about it.

Charles T. Tart, Ph. D.
Professor of Psychology
University of California
Davis, California

Unusual energy report

I've seen portions of a report being prepared for the Energy Research and Development Administration by Stanford Research Institute titled, "A Preliminary Social and Environmental Assessment of the ERDA Solar Energy Program 1975-2020." It looked so good (critical, conservative, insightful) I wrote to the ERDA Project officer, James Benson, for details. He replied:

Dear Stewart,

This letter is in response to your request for information about the study being performed under me by Bill Harman at the Center for the Study of Social Policy at the Stanford Research Institute, Menlo Park, California 94025.

The study is an assessment of the major social and environmental implications of the national solar energy program as outlined in document ERDA-49. The study examines the required social implementation steps and potential environmental effects of several energy scenarios through the year 2020. The energy supply scenarios vary from 85 to 180 quadrillion BTUs in 2000, compared with about 70 quads this year.

The study also discusses the increasing public demand for small scale decentralized energy sources, different societal paradigms and a variety of social policy issues which will have to be confronted before our energy situation is resolved.

The final report is due by the end of this September.

James W. Benson, Program Manager
Environmental and Resource Assessments
Division of Solar Energy

People interested in seeing the report should request copies from: Division of Solar Energy, ERDA, Washington, D.C. 20545.

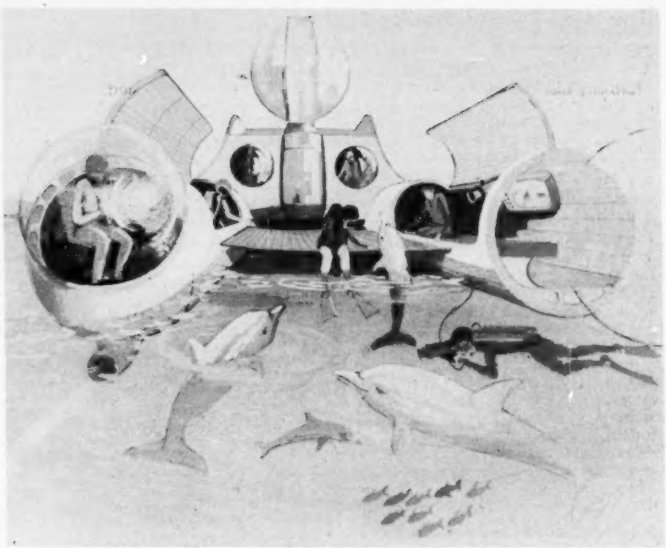
–SB

Dolphin Embassy

We have recently returned from a very interesting three month tour of Australia where plans to implement the Dolphin Embassy concept became finalized.

The Dolphin Embassy is a floating interspecies communication station designed for long term human/dolphin interaction in the open sea environment. Our intention in this project is to develop an interspecies language. The voyage and human/dolphin communication experiments will be recorded on film and videotape for a feature length documentary production. Enclosed herein is a copy of the Dolphin Embassy proposal. I would look forward to hearing your comments and ideas about the proposal. Additionally, we would appreciate any suggestions you might have concerning persons or institutions that might have an interest in financial involvement in the Dolphin Embassy mission.

Doug Michels
Ant Farm
Box 77082
San Francisco, CA 94107



The Dolphin Embassy viewed from directly astern

The Genesis Strategy

Schneider and Mesirow use weather as a frame of reference to discuss saving the planet, just as the Ehrlichs use population to talk about the same important doing. One of Genesis Strategy's *chapters is even titled "Everything is Connected to Everything Else," which attitude is fundamental to the book's approach. There is a hell of a lot of interesting information here about climatological history, the possible impacts of climatic fluctuations on agricultural productivity, and the climatic implications of a whole range of proposed energy developments – there's stuff about ozone, nitrogen fixation, chlorine in sewage treatment, weather modification (both deliberate and unintentional), and some startling illustrations. There is, in fact, so much diverse and useful information that the book feels rambly; the rambling's enhanced by the authors' sometimes colloquial style (although they use the passive voice enough to maintain their credibility).* The Genesis Strategy *is substantial, readable and responsible, but as the title implies, it's basically a geopolitical argument. Since I agree with about half that argument, I recommend it.*

Here's the strategy: "... short-term emergency aid and longer term technological assistance and capital investment from the rich. These would be coupled to and contingent on mutually agreeable plans between the donor and recipient nations, to bring about self-sufficiency for the recipients as rapidly as possible but within a fixed time, after which aid would be unnecessary and not forthcoming."

Schneider and Mesirow challenge lifeboat ethics, a challenge in print which is long overdue, and which is probably best done in just such a format – a basically scientific book, laden with facts and decently hedged opinions. Referring to the metaphors of lifeboat ethics and triage, they say:

"The implicit and crucial assumption invoked by these metaphors is that the earth has already reached or surpassed its carrying capacity; that is, it is overpopulated to the point where further population growth would require that one person be sacrificed to allow another to exist. But no one knows precisely how large the carrying capacity of the earth really is today or could be in the next century."

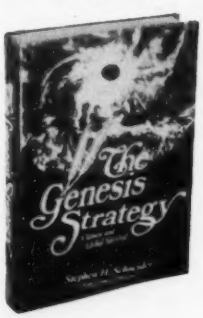
Later they comment: "... to accept despair when hope is possible might create a self-fulfilling prophecy, since inherent in continuous pronouncements of doom is a serious danger of inaction. If one were booked on the Titanic and knew its fate, then why not go first class?" Right on. It's nice to hear hightone intellectuals mentioning the values of faith, hope, and charity.

The half of the strategy that is discomforting, if not disagreeable, is that while the book makes a good stab at proposing strategies to keep the earth and its people alive beyond the forthcoming crises, plain ordinary non-expert people are nowhere to be found in the book as problem solvers. People are there as populations, labor, electorates, the public, but nowhere as decision-makers (unless voting is to be considered decision-making, a proposition I find increasingly laughable.) The authors talk about setting up a fourth branch of government, a "Truth or Consequences" department, which would analyze the major problems we face and try to articulate the pros and cons of the various possible solutions via prime time tv. This is not the same thing as citizen involvement. Maybe Schneider and Mesirow weren't up to going the whole distance, or maybe it's a tragic flaw in the book.

Maybe it's impossible to deal with the world problematique without resorting to meta-level solutions. Schneider and Mesirow offer a set of well-meaning proposals for international co-operation, all of which would be admirable if they could possibly be implemented. But given our present levels of local connection with global affairs ("Get the U.S. out of the U.N. now!") it would take an international gang of unprecedentedly benevolent despots to bring it off.

In spite of those considerations, it's a good book, a useful book, and no apocalypse-head's library should be without one.

–Stephanie Mills



The Genesis Strategy
(Climate and Global Survival)
Stephen H. Schneider
and Lynne E. Mesirow
1976; 408 pp.
$14.95 postpaid
from:
Plenum Publishing Corp.
227 West 17th St.
New York, NY 10011
or Whole Earth

Land Use

The Family Cow

This book is for beginners interested in keeping one milk cow, and it is a joy to read – combining the best information, old and new, with long personal experience, and a clear, light-hearted style. Although for many a milk goat may be a better choice – they eat less and give less milk than cows – this book is well worth reading if you are trying to decide which is best suited to your scale of farming. Lots of detailed information, including feed rations.

–Richard Nilsen

The Family Cow
Dirk van Loon
1976; 257 pp.
$5.95 postpaid
from:
Garden Way Publishing
Charlotte, VT 05445
or Whole Earth

I don't believe anyone with no domestic animals and the responsibilities that go with them should jump into owning a cow. It's not that they take so much time, but that in most cases they are an everyday, two-or-three-times-a-day obligation, especially when they are in milk.

Also, the cow makes the most sense when she is able to play at the hub of a coordinated whole that includes a garden – whose scraps she eats – and chickens and pigs that are able to make the most out of excess milk or milk by-products the family can't use.

I had thought of calling this book *The Neighborhood Cow*, for the reason that we have become a society of people who hate to be tied down. And unless there is at least one other person to step in on occasion to milk, feed and clean up after the cow, the idea of a day or weekend off can become an obsession.

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Storing loose hay at the Ross Farm Museum. A summer afternoon at an operating farm museum like this one at New Ross, Nova Scotia, is worth a library of books on nineteenth-century farming. Many of the practices demonstrated will be more applicable to part-time farming than those on a modern milk farm. Few part-time farmers will use oxen for farm power, but the family cow could be trained for light draft work.

A medium-sized dairy cow produces about 13 tons of manure a year (feces plus urine). . . . Leaving manure piled against the barn, washed by the rain and eventually spread months later, is the worst way to treat the barn and the manure. Wood rots fast against a bank of manure. Most of the manure's nitrogen will be converted to gases that are blown away, or into soluble nitrates that get leached into the soil. Many of the other minerals will be washed away too, leaving a lush patch of ground by the barn and starved fields.

A quantity of moist, acidic manure, denied air, ferments and is preserved like silage. And so a practical way to handle manure on a small place is to first of all use plenty of bedding – sawdust, shavings, peat moss or straw – to stop up the urine. Then spread the manure as frequently as possible, from a well-packed and moist pile sheltered by a roof in a humid climate or built straight-sided and dished like a fallen cake. This gives the rain less of a chance to wash away the soluble nutrients. . . . If, when the manure pile is opened, it's white and dusty inside, it means the air-loving molds and other microorganisms of rot have thrived. Much or all of the nitrogen will have been lost. Keep the next pile trampled down and maybe add a little water. It's hardest to avoid this "fire fanging" when using lots of straw or old hay for bedding because the manure doesn't want to pack down.

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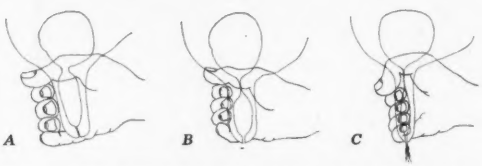


In hand milking, (A) Grasp the teat high so that the thumb and index finger are able to circle the teat where it meets the body of the udder. (B) Close off the top of the teat cistern by squeezing thumb and index finger together over the annular fold. (C) Close rest of fist so that the milk trapped within the teat cistern is forced through the streak canal.

•

Buying a cow is like buying a used car – 90 percent of the gamble is in the person you buy from. Your best bet is on an honest neighbor who would like to see you and the cow succeed. Yet even the most sincere and honest person can't know certain things about a cow without the help of a veterinarian.

The prettiest cow with the best past record of kindness and performance is useless if:

(1) Her udder and teats aren't in good order.
(2) She is not carrying a calf.
(3) She has not been tested and certified free of Bovine TB and brucellosis, preferably within the past month. (Johanes disease too, if this is a problem in your area.)

•

Barely-chewed forages, then, are swallowed into the rumen. This is bruised grass, busted here and there, but for the most part intact. Microorganisms are waiting, for this is their staff of life. After an hour or two of grazing the rumen tank is loaded, and much of the once-munched forage has begun to feel the softening effects of enzymes produced by the microorganisms. The cow finds a quiet spot and lies down. She's there but a moment before, *errrp* – up comes a cud, a fist-sized slurp of green mash pushed up from the rumen and in part from the reticulum, by a neatly controlled reverse swallow. Rumination has begun. She presses excess juices and saliva from the slurp, swallows this in normal fashion, and begins to chew. Notice the sideways grinding action. Stand by a cow and listen to the powerful, and methodical, crunch, relentless crunch.

Food Drying booklets

The Food Dryer's Drying Booklet *is an excellent manual in its clarity and scope of dehydration methods – more options than in any drying book I've seen, with emphasis on energy efficiency. Adapts several food industry techniques to home scale, such as back yard sulphuring and oven pasteurization.*

How to Build Food Drying Equipment *includes solar collector, air recirculating cabinet, and others. Clear diagrams; fairly easy.*

–Rosemary Menninger

The Food Dryer's Drying Booklet
John A. Magee and Connie S. Dexter
1975; 40 pp.
$2.00 postpaid
and

How to Build Food Drying Equipment
John A. Magee
1975; 17pp.
$2.00 postpaid
both from:
California Wood Plans
P.O. Box 541
San Luis Obispo, CA 93406

From *How to Build Food Drying Equipment*

New dehydration method for vegetables and fruits

This new method of drying produce is based on the cereals-shot-from-guns technique. Food is cut into pieces and exposed to a high temperature at high pressure then rapidly shot back into the atmosphere. The food dries more rapidly and retains somewhat more nutritional content than slow dehydration. It reconstitutes much faster, almost as quick as frozen food.

Developed by the U.S. Department of Agriculture, this is seen potentially as a replacement for freezing since it is less energy-intensive and cheaper to ship. But it could also be used by local food and farm coops, in addition to, or instead of, canning. For instance, in California and elsewhere, the state departments of Food and Agriculture are setting up community canning and drying centers in selected rural towns. For towns with large amounts of produce, a drying center employing this new method could be more efficient than combined canning and traditional drying.

A cannon-type batch dryer costs $30,000 new and can be hooked up to traditional dehydrating equipment. Food is diced, then dried slightly in a rack dryer, transferred to the cannon dryer and finished off back on the rack.

Overall, this is much quicker, expending less energy than complete rack drying; cheaper and lighter weight than cans, yielding a more stable product than canning or freezing. Taste-wise, it's between canned and frozen when reconstituted.

The U.S.D.A. is still working on the industrial-size unit; the smaller size is ready now, but they say they hadn't really thought of its being used by communities. Contact:

Jim Craig, Chemical Engineer
Eastern Region Research Center, U.S.D.A.
600 E. Mermaid Lane
Wyndmoor, PA 19118

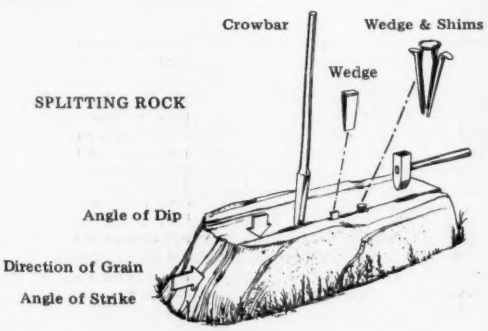
–Rosemary Menninger

Building Stone Walls

There's a lot to be said for stone walls, but this modest book doesn't say it. Just good pictures explained by the terse, New England traditional few words. Especially good in that a wide variety of stones are utilized, not just flat ones.

–J. Baldwin

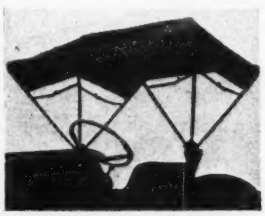
Building Stone Walls
John Vivian
1975; 76pp.
$2.95 postpaid
from:
Garden Way Publishing
Charlotte, VT 05445
or Whole Earth



Central Tractor Parts Company

A mail-order supply house for farm machinery and parts, similar to Tractor Supply Company (CATALOG, p. 74). The difference is that this company also sells used tractor engine parts for all major makes of American tractors. They offer a 30 day guarantee on used parts, and the listings are quite extensive. So if you have an old but reliable tractor that will run fine if only that part that's been back-ordered for 10 months ever arrives, you might do better checking here.

–Richard Nilsen



Central Tractor Parts Company Catalog
Free
from:
Central Tractor Parts Company
1515 East Euclid Ave.
Des Moines, IA 50313

CENTRAL TRACTOR'S JUMBO FOLDING CANOPY
$50.50

Field tested, gives ample head room and elbow room. Mounting location does not conflict with equipment. 48" wide and adjustable to desired angle. Please advise: color desired and axle or fender mount, and model of tractor so we can include the proper mounting brackets.

Axle mount, red 11115-235; axle mount, yellow 11116-235; fender mount, yellow 111122-235; fender mount, red 111123-235.

Replacement covers: red 11117-235, yellow 11118-235. $15.25

Waldo Bascom

Community Gardening

BY ROSEMARY MENNINGER

America is now gardening. The word is that 51% of U.S. households grow some of their own food, according to **Time** —the greatest interest since World War II. As gardening then was associated with patriotism, now community gardening is re-awakening neighborhood spirit with goals of community self-sufficiency.

Community gardening programs have grown rapidly in the past two years due to the popularity of the idea. Initial funds often came from city or county governments. Now the programs are becoming institutions themselves, and many are moving out from under the umbrella of a single source of funding. Generally, the more varied the sources of funds, the fewer the strings attached and the more politically independent the program can become. Funding in health, education, housing, crime prevention and the arts, in both the public and private sector, is being broadened to include gardens.

A significant development in the past year is that individual programs, which are so locally evolved that no two are alike, are learning from each other now, and getting the sense of a whole with its parts. Along with this, the realization is growing that gardens are directly tied to the wholeness of the cosmos. Helping people garden spreads this realization.

The community gardening profession includes garden organizers salaried by government, foundation grants, or contracted by institutions and businesses hosting therapeutic and employee gardens. Two new branches are developing: public works jobs for the unemployed to be individual garden site managers, and full-time professionals in gardening-related fields devoting their spare time to starting gardens. Economically, these two options balance each other and the effect is a kind of socialism.

Among city gardening programs, San Francisco's is unique as a combination of programs — a City-run program for neighborhoods, a CETA federal employment program involving schools, and the Institute of Applied Ecology, my own non-profit organization, starting gardening programs with institutions and businesses. The Zen Center of San Francisco is an organization with a sophisticated garden operation reminiscent of some of the old state hospitals and prisons. Members grow more than enough food for themselves on a farm-scale organic garden a few miles from town. The large surplus is sold at righteous prices in the low income neighborhood where the Zen Center is located.

Because of the many problems of urban gardening, from vandalism to lead pollution (from cars), community gardens have been slow on developing gardening aesthetics and technique. The Biodynamic-French Intensive basics of compost, beds, and non-row planting have come easily to many West Coast gardens. But gardeners are beginning to want more — a fuller understanding that leads to greater rapport with nature and bigger, more continual yields.

New technology is also needed. A popular new program near Canyon de Chelly on the Navajo Reservation involves a series of greenhouses protecting vegetables from the desert elements. However, these structures are gas-heated rather than solar, and they keep catching fire in the spring and winter winds. Like urban gardening programs, the Navajos need the assistance of the research and educational organizations that focus on energy and food production techniques.

The closed systems of the New Alchemists in Canada and the carefully researched gardening techniques of Ecology Action in Palo Alto and the Community Environmental Council in Santa Barbara are geared for sophisticated community self-sufficiency programs of the future. Rural and urban communities are beginning to develop both a need for self-sufficiency systems and a readiness to utilize them. The Institute for Local Self-Reliance in Washington D.C. is one of the first groups to work both with poor people and systems research. It shouldn't be long before gardening's two extremes, its political roots and intellectual tops, are working together at last.

Government may initiate the bridging of this gap. Some of the most forward-looking programs in the planning stages of federal and state agencies involve local food production and distribution. In California, the Department of Food and Agriculture is developing models for towns to maximize consumption of locally grown food, directing surplusses to poor people and institutions.

The Food Bank in San Jose is a program which is developing along these lines. In Chico, California, a gardening program of farmworkers produces food for several hundred people. The gardeners formed a local political party and began winning city elections.

Susan Ehmer, SF Chronicle

Clementina Garden in San Francisco adjoins a housing project for retired people. Chinese couples are especially active in the garden. Rosemary Menninger and Richard Nilsen helped start Clementina three years ago.

The low income sections of Palo Alto and adjacent Menlo Park have a farm-size garden project on the marshland of San Francisco Bay. Called "The Back 40 Acres," it has 245 plots involving 500 people, soon to expand to 1200. Besides family plots, there are communal fields of grains and rice. This is a program of the future.

The leaders of most of these community based programs have come out of the woodwork with little previous gardening experience. In California, over half of them are women, including several young, single mothers.

In the first years of community gardening, organizational skills have been the most important qualification for gardening leaders. But the schools teaching gardening have totally neglected this. Consequently gardening education programs have grown up separated from the community gardening movement. However, the graduates of these schools possess a remarkable strength of gardening technique and philosophical understanding of nature.

The facilities of these schools, such as the Farm and Garden Project at UC Santa Cruz, are horticulturally elegant. While staying apart from the gardening masses, they have built inspiring botanical gardens which are primarily educational, but also serve as museum, laboratory and park. The Santa Cruz project cultivates not only vegetables, field crops, flowers, and herbs, but a wide array of fruits and berries as well.

Alan Chadwick, who founded the Santa Cruz project, now resides with his apprentices in Covelo, California, a tiny town in a Shangri-la valley complete with Indian reservation. Chadwick is building his Round Valley Garden Project to reflect his conviction that gardens are gifts of nature for man's spiritual enlightment. In his Shakespearean voice, he describes Biodynamics as the search into classical knowledge for the laws of Nature, and the belief that following those laws will bring great rewards.

In New York City there is an energetic group of volunteers who share Chadwick's devotion to nature. They are the Green Guerrillas, a crew of 70, most of whom work 9 to 5 in related fields such as horticulture, biochemistry and landscape architecture. In their spare time and without pay, they have assisted poor neighborhoods in establishing over 100 inner-city gardens and parks. The Green Guerrillas are the leaders in people/plant interaction. They have shown dramatically that people's desperate need for involvement with nature is a powerful resource in this country. For example, with the Guerrillas, several neighborhoods worked continuously for three months just clearing the rubble from a piece of ground so they could garden. In the Bowery, drunks built a greenhouse to sleep in on cold nights.

The therapeutic effects of gardening are rapidly being recognized by mental health and physical rehabilitation institutions. Degree programs in horticultural therapy are now offered at state universities in Rhode Island, Delaware and Georgia; also at Texas Tech, Kansas State, Michigan State, University of Florida, and Clemson College in South Carolina.

The application of gardening as a centering activity works both on the individual and on society. Nature is a relentless force; given the chance it will push up through a crack in a parking lot; given time it also begins to realign human behavior. These many gardening programs in America seem to demonstrate that for many people gardening and not wilderness is the stepping off place for renewing commitment to nature.

In the garden of an elderly Italian and in the garden of a political commune there appeared the same sign:

> The kiss of the sun for pardon,
> The song of the birds for mirth,
> One is nearer God's heart in a garden
> Than anywhere else on earth. ■

Recreational Community Gardening

Good handbook for a community garden; not for a gardening program. Thorough; especially good on the paper work of gardening: insurance, job description, etc. Highly recommended over the **Gardens for All** *$7.00 manual. But not specific enough to help gardens that want to experiment.*

—Rosemary Menninger

Recreational Community Gardening
Susan York Drake and Roberta L. Lawrence
1976; 71 pp.
Free (in limited supply)

from:
Office of Information
U.S. Bureau of Outdoor Recreation
18th & C., N.W.
Washington, DC 20240

Standard garden plots have a break-even rental rate of $35, $25, and $20 for 50 percent, 75 percent, and 100 percent occupancy, respectively. Organic garden plots break even at $30, $20, and $15 for the same occupancy levels.

The Color Dictionary of Flowers and Plants

Very useful; seed packets should be patterned on this book; then I wouldn't have to use it three times a day. First, it tells the basics of growing each flower, listed in Latin but cross-referenced with common names. It's surprising to see what vital information is neglected on the packet. Then it tells where to turn for the photo of what the plant really looks like, not just a crudely drawn blossom staring you in the face. Seed packets are worthless!

—Rosemary Menninger

The Color Dictionary of Flowers and Plants for Home and Garden
Roy Hay and Patrick M. Synge
1969; 584 pp.
$6.95 postpaid
from:
Crown Publishers
419 Park Ave. South
New York, NY 10016
or Whole Earth

ROSA Rose

Roses form a very large group and are most valuable garden shrubs. Here they are placed in five sections. First, the sp. and direct hybrids; second, the old and new shrub roses; third, the Floribundas, one of the most valuable rose races of recent times with several *fl.* to a stem, sometimes the *fl.* are nearly as large as those of the Hybrid Teas and the distinction between the two is tending to be indistinct and much less than formerly; fourth, the Hybrid Teas so popular for garden decoration and cutting; finally we have a small section of climbing and rambling roses.

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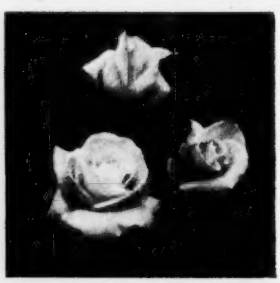
'Virgo'
One of the best whites. *Fl.* with tall centre and long bud, snowy-white with slight creaminess on outside of petals. Not such a vigorous grower as some, *fl.* tending to damage in bad weather, this is a characteristic of all the larger flowered white Hybrid Tea roses. 1887.



1887 Rosa 'Virgo'

Beekeeping in the United States

The daddy of bee books, with fine bibliographic references. Different from Aebi's **Art and Adventure of Beekeeping** *(Winter '75* **CQ***), which is the art and craft of bee culture. This is a microscopic look at bee physiology and an all-encompassing view of their uses for man. Far better than Cornell University's* **Bees and Beekeeping** *(Winter '75* **CQ***), which attempts the same thing. This book is evidence that in 1967, the Dept. of Agriculture was fully aware of the toxic effects of herbicides and pesticides on bees. Since then, the U.S. bee population has dropped drastically. Also, many of the illustrations in other bee books came from this one.*

—Rosemary Menninger

Beekeeping in the United States
(Agricultural Handbook No. 335)
1967; 147 pp.
$2.65 postpaid
from:
U.S. Government Printing Office
Washington, DC 20402

Dead bees at hive entrance - a symptom of pesticide poisoning.

Other good Government pamphlets

Worthwhile booklets from the U.S. Government Printing Office, Washington, D.C. 20402.

—Rosemary Menninger

Economic Development Through Cooperatives, $ .55, U.S. Dept. of Agriculture, Program Aid No. 1088.

Beekeeping for Beginners, $ .30, U.S. Dept. of Agriculture, Home and Garden Bulletin No. 158.

Controlling the Greater Wax Moth, a Pest of Honeycombs, $ .25, U.S. Dept. of Agriculture, Farmers Bulletin No. 2217.

Commercial Rabbit Raising, $ .75, U.S. Dept. of Agriculture, Agriculture Handbook No. 309.

Growing Raspberries, $ .25, U.S. Dept. of Agriculture, Farmers Bulletin No. 2165.

Controlling Diseases of Raspberries and Blackberries, $ .35, U.S. Dept. of Agriculture, Farmers Bulletin No. 2208.

Growing Cauliflower and Broccoli, $ .25, U.S. Dept. of Agriculture, Farmers Bulletin No. 2239.

Growing Ground Covers, $ .30, U.S. Dept. of Agriculture, Home and Garden Bulletin No. 175.

Growing Ornamentals in Urban Gardens, $ .30, U.S. Dept. of Agriculture, Home and Garden Bulletin No. 188.

Indoor Gardens with Controlled Lighting, $ .30, U.S. Dept. of Agriculture, Home and Garden Bulletin No. 187.

Farming

This is the first U.S. Department of Agriculture-sponsored publication I've seen that focuses on organic agriculture. It's a sourcebook of materials, books, periodicals, organic farming and gardening organizations nationwide, and other general info. A particular strength is the cataloging of books on plant diseases that attack tree and fruit crops, forage crops and vegetables. The section on biological control of insects is the most comprehensive resource list available on that subject.

Farming *is Volume I of a series that will cover non-related topics, including Land, Co-ops, Networking, and Nutrition. Any* CQ *readers who are working in these areas can send information to the Alternative Agricultural Resources Project for inclusion in the future volumes.*

—Rosemary Menninger

Farming
(Sources for a Social and Ecologically Accountable Agriculture)
Henry W. Esbenshade
1976; 68 pp.
$2.00 postpaid

from:
Alternative Agricultural Resources Project
Dept. of Applied Behavioral Sciences
University of California,
Davis, CA 95616

PLANT-DERIVED INSECTICIDES

RYANIA
Hopkins Agricultural Chemical Company
P.O. Box 584
Madison, WI 53701
(Helps to control coddling moths on apples and corn borers in corn)

ROTENONE AND PYRETHRUM
Garden Supply Stores & Seed Firms
(In pure state: vets and pet shops)

B.D. Tree Spray (Bio-Dynamic Product)
Peter A. Escher
Threefold Farm
Spring Valley, NY 10977

DORMANT OIL SPRAY

SCALECIDE
B.G. Pratt Co.
206 21st Ave.
Patterson, NJ 07503
(Kills: Scale, Red Mites, Aphids. Spray before new growth starts on fruit trees, shade trees, ornamentals)

TREE TANGLEFOOT

The Tanglefoot Company
314 Straight Ave., S.W.
Grand Rapids, MI 49500
(Protects trees from crawling insects)

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Covelo Garden Project
P.O. Box 504
Covelo, CA 95428

Alan Chadwick (Master Horticulturalist of the Bio-Dynamic/French Intensive method) directs the training of apprentices for one or more years in a rigorous program which involves hard physical work complemented by directed personal study in a specific aspect of farm and garden production.

Garden Way Cart

As gardens get bigger so does the demand for a bigger wheelbarrow. The Garden Way Cart, Model 26, has an international reputation, but for anyone who hasn't heard of it, the cart is light-weight and balanced so that a bulky, heavy load can be carried with ease. It's the same principle as a horse-drawn sulky in a trotting race, which enables the horse to run with the least possible drag. Comes with a try-it-you'll-like-it-or-your-money-back guarantee.

—Rosemary Menninger

Garden Way Cart
$119.50 + shipping

(Also available in other models and kit form. Write for price list.)
from:
Garden Way
Charlotte, VT 05445

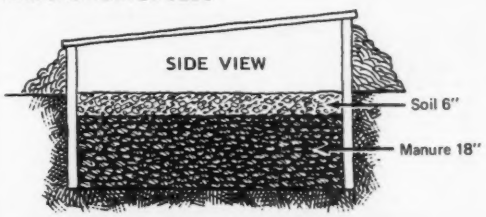
Down to Earth Vegetable Gardening Know-How

Great new gardening book. Raymond is the man quoted till Kingdom come in most Garden Way publications. His information here is excellent and the presentation — charts, layout and graphics — is the best I've seen anywhere. Puts Sunset books back in the '50s.

—Rosemary Menninger

Down to Earth Vegetable Gardening Know-How
Dick Raymond
1975; 156pp.
$4.95 postpaid
from:
Garden Way Publishing
Charlotte, VT 05445
or Whole Earth

MANURE-HEATED BEDS



Now that electricity is both scarce and expensive, heating hotbeds with manure again seems practical. Horse or mule stable manure with no more than 1/3 bedding material is ideal. Seven to ten days before planting, fill 18- to 24-inch-deep pit to within 6 inches of ground level. Pack firmly and wet down. After 3 or 4 days, turn manure, pack, and wet if dry. If manure is heating evenly after 3 or 4 more days, add soil — 6 inches for direct planting, 2 inches if you will plant in containers.

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VEGETABLES THAT CAN BE HARVESTED ALL OR MOST OF THE WINTER

Root Crops	Greens
Parsnips	Kale
Root Parlsey	Collards*
Salsify	Mustard*
Jerusalem Artichoke	Spinach*
Turnips*	
Rutabagas*	
Brussels Sprouts*	

(Root crops can be covered with straw to protect them from hard freezes.)

*In Southern gardens

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BUCKWHEAT: It's hard to beat buckwheat as a green manure for really impoverished soil. It will grow in sand, clay, and overly dry or wet areas. Of course, it will be scraggly and reflect the low soil quality, but at least you can get a cover crop going. Buckwheat can be broadcast by hand.

The Foredads

by Gary Rurkun

[Explaining the origin of the NW tree-planting cooperative, The Hoedads, who were told of by J.D. Smith in the Summer '76 CQ. Gary Rurkun is 24, a biophysics grad student. His crew was the Natural Wonders.]

Perhaps your readers would be interested in the genesis of the Hoedads. A co-op of two hundred people doesn't just spring up from nothing, but like a crystal it grows from a nucleus of committed and seminal people.

My experience with the Hoedads began in the late summer and fall of 1973 in Eugene, Oregon. At the time I was looking for work, any work, as were many folks around Eugene. It turned out that every hitchhiker I picked up and asked about work (beats the want-ads) had heard something about an infinite fountain of work which began with the rains. There would be no bosses, you could smoke dope all day, make lots of money, "run by hippies, man." No one knew who or where or how it would come together, at least none of my sources. After hearing this same nebulous story from a number of different people, it became clear that this was no mass dillusion and that perhaps there was such a thing as planting trees (images of huge tractors hefting Giant Sequoias) and that the hippie business existed.

Eventually with the help of several miracles I ended up at the pre-pre-pre general meeting of the primeval co-op on a piece of land outside of Eugene. We arrived on the scene to find vans, school busses, and assorted fifteen year old vehicles parked all around the small farm house. It was an assembly of perhaps 200 various Oregonites of every persuasion, from grizzled logger types to frizzled guru types, cork boots to thongs, Big Red to ginseng. All were looking as confused as the first day of high school because at that point for most of us Hoedads was a hum in the air more than a reality.

After a bit of moseying and a few rounds of rumoring, it turned out that someone was in control. A woodsey type character with a full beard, a huge build, and powerful voice called us all around him to chat. He was 25ish and articulate and had a very uneasy look on his face. We were probably 200 of the mottliest, most disorganized folks he'd ever seen. But he and his friends were responsible for our being there that Sunday morning so he went on.

He explained the trip. He and his friends standing next to him had planted trees as a cooperative crew for a few years already and had really enjoyed working together, unlike commercial tree planting operations with a crew boss and hourly wage workers. They went on to explain the advantages of a cooperative tree planting for making money as well as for our souls.

But these boys didn't just want to enjoy their crew; being true new age entrepreneurs, they wanted to be the seed that creates a larger co-operative. They did not want to give the assembled crowd any work. They offered to get contracts for us, all of us, if we could organize ourselves into cohesive cooperative crews like their crew, the Cougar Mountain crew. They then went on to describe how to organize a crew; the necessity of some money, a crew crummy (the rig in which you ride to work), a treasurer, a crew ideology or by-laws, etc. A lot of information was passed on how they intended for us to get it together. Then a break.

The folks were left with their minds reeling. Is this for real? Could it possibly come together? What's their angle? Whose crew do I get on? How do you organize a group of undisciplined strangers into a work force?

The practicalities began to evolve that afternoon. The Cougar Mountain crew would put up their 300 acres of land as collateral to cover the bonding on the contracts for which we would bid. But we had to know how many crews in order to know how many contracts to bid on. It seemed that everyone there wanted to join a crew and was ready to plant. "Okay, then organize yourselves into crews of about twenty,

Patrick Piala

The Cheap Thrills Crew

right now," we were told. Now there was unspoken panic in the faces of many, shades of dances in junior high school and who will be picked to dance and who will stand by the wall. I wished my hair to grow and my voice to deepen. Somehow we all assembled ourselves into crews; some crews formed around existing collectives, a video group, a group who owned a commune out of town, some old friends. My housemate of one week knew a lot of people so I snuck into his crew.

The Cougar Mountain people then told each crew to go ahead and get organized, buy a crummy, train to plant with them. Any problems, just call CM for advice. The responsibility rested on the shoulders of each crew, but it might work. "It might work" was the thought of that day.

What followed was a period of disbelief and mistrust born from experiences with ripoffs and self-motivation. We had little experience with moral rather than monetary motivation. But discussion over these issues soon yielded to the trust and adventure of organizing the crew.

Our crew organized quickly and was ready to work. We were twenty people from varying backgrounds, a few woodsmen but mostly ex-college students, reformed surfers, and assorted followers of gurus. We collected a $20 membership fee to finance our 1953 Chevy crew carrier, the crew totem. We discussed the various forms our crew could take and agreement was reached to keep it loose at first until we understood the possible problems. We were then ready to report back to Central, as our headquarters became known.

Central was a committee composed of elected representatives from each crew plus anyone else who knew what was going on. Thus Central was mostly Cougar Mountain in control because only they were informed. No votes were taken as decisions came forth in discussion. It was a primitive but effective governing body.

It turned out that seven crews organized like ours which meant there were eight crews including Cougar Mountain. After our first day of planting trees out in the rain and mud two weeks later, two of the crews disbanded. Only those crews which had formed with a solid foundation could survive the small money and wet feet of that day. So we were left with six crews ready to organize the cooperative. One hard core crew had within two months grown five more very fragile but ambitious crews.

The task at hand now for survival was to create a just system of representation for each crew in order to decide on business problems, dividing up contracts and income, etc. Being children of America, we chose a representative democracy with a temporary oligarchy by the Cougar Mountain crew since we were inexperienced.

After a few months of planting trees all became more familiar with the business and practicalities, and like a teenager growing up, we were ready to assume a more active role in the management of the co-op. A formal set of by-laws were adopted, the co-op was legally incorporated, and an elected council proceeded to usurp the power which Cougar Mountain had wielded. Their child had matured.

Once the organization was constructed the only worry was to keep it solvent which demanded both money and energy. The organization of the co-op was so enchanting that many just wanted to revel in its beauty and work on the business end of it. But our bread and butter was tree planting and that we did. By the end of our first season, we had done contracts all over Oregon, Washington, Idaho, Montana, and Alaska with the income coming into Central and dispersed to the crews.

At each step in the maturation of the co-op, the council made the decisions which improved our solvency, efficiency, and livability on the grand scale. But the unit of the co-op was the crew and the decisions at the crew level affected each of our lives more directly. While the council would affect how lucrative our contracts were, the crew would decide when to go to work, how long to work, who works, how to divide up the money, who cooks, who was in charge of keeping the Forest Service happy, etc. And each crew was autonomous. Some chose to organize even the meals on a communal level, with a dozen people planting and one person cooking and cleaning up camp, all for the same daily wage.

The crew is like a tribe, a mini-nation, and the method of dispersing their income reflects the ideology of the crew. My crew began with the assumption that all were equal in ability or strength therefore our pay would be equal, i.e., divide up each day's crew earnings evenly among the day's workers. But it evolved that we were not equal, some could plant faster and longer, some were leaders. The obvious solution was to pay each according to the number of trees he or she planted. But that seemed too much like capitalism plus it bred competition among crew members which has no place in a cooperative. So we tried a system based on attitude, each person received a full day's wage only if he or she felt that a hard day of work had been put in. If one didn't plant as hard as possible, he or she would then request less pay for the day. It was a system based on self-criticism and a minimum of peer pressure, and it did not work. No one ever felt that he or she had not put in a full day's effort, yet other crew members were quick to accuse others of laziness. We eventually, and most crews as well, divided up the income in the tried and true capitalist tradition of more output, more pay.

At the end of the first season of planting, the overwhelming feeling was of success. It had worked; details needed to be honed but by and large it had been an incredible lesson in self-organizing systems. The question which was on the mind of all was whether or not to continue to grow or not. It was well known that thousands in Oregon need the work but it was also felt that perhaps we were at the optimal size for a co-op, still personal but large enough to have some power. It was decided at a meeting of all Hoedads to add a few crews, and to help organize other co-ops in other areas.

The other direction which people in the co-op want to move is to diversify the business so that people can grow individually with varied work experiences as well as the communal growth which the co-op fosters. Tree planting is repetitive fairly unskilled work which lost its appeal to many members after a few years. The idea of a building and wrecking co-op was batted about and continues to be an issue. But the skills of the construction trade are not easily learned, plus the range of skills from foreman to shoveling involved contradictions to our ideas of equality on the crew. It is difficult to work in an egalitarian crew if everyone is doing jobs of varying skills. These are the problems with which the co-op is struggling today. It will be interesting to see the synergy of the people at work in their eventual solutions to them. . . .

The condition which allowed the birth of this large co-op does not, unfortunately, exist in many places. That condition is the availability of large quantities of labor intensive, semi-skilled work on a contractual basis. The reason the Hoedads were able to grow so quickly is that the main obstacle was organizing the crew into a workable unit, with the need for skill in tree planting not difficult to attain, and lots of work around.

But there are fountains of work just waiting for co-opertization in many agricultural areas, and the need for reforestation wherever logging is done. All that is needed is for a dozen people to organize themselves and then plant the seed. Let a thousand co-ops grow. ■

Box 428, Sausalito, California 94965

Harrowsmith

Canada improves on **Mother Earth News**. *Country living, growing, building, and craft – without propaganda.*

–SB

Harrowsmith
James M. Lawrence, ed.
$6 /year
from:
Harrowsmith
Camden East
Ontario, Canada
K0K 1J0

Although commonly used in Europe, the lowly potato is seldom thought of in North America as a suitable feed for livestock. In fact, they contain twice the dry matter of mangels or turnips (about 21 per cent), and can be a valuable economy feed when available.

•

"The older tractors turned over much more slowly and therefore would last much longer. A slow engine with a heavy flywheel can develop the same power as a light engine at high RPMs, and last longer," says Ptak.

Among the various manufacturers, none seems to have produced a notorious "lemon" between World War II and the late 1950s. Any of the Fords (the 8N, Jubilee and Major are all popular with small-scale farmers), Cockshutt, Allis-Chalmers, Case, David Brown, Oliver and John Deere are all well respected for the quality and durability of their machines.

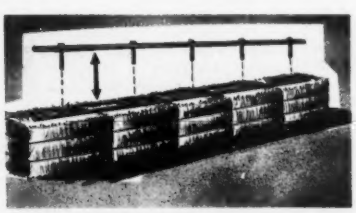
Ideas for All Around the Farm

What American farmers tinker with when they're not busy feeding the world. **Successful Farming** *magazine collected these suggestions from farmers over the years. 1250 handy ideas and 540 illustrations showing down home engineering and "making it work right" creativity.*

–Paul Kokesch

Ideas for All Around the Farm
(Second Edition)
Editors of
Successful Farming
1974; 98 pp.

$2.00 postpaid
from:
Successful Farming
Box 384
Des Moines, IA 50336
or Whole Earth



I make bale stacks stronger by using different lengths of pipe with holes drilled at intervals and long ¼" bolts fastened in them. With these pipes at different levels in the stack, I can make bigger stacks. Bales are held tightly together keeping out rain and snow and there is less spoilage.

Effects of Sublethal Exposure to 2,4,5-Trichlorophenoxy-Acetic Acid on Adult Male Homo Sapiens Open Field Behavior

(Leads to increased vehicular activity, among other things)

BY J.R. FELIX

AND PIERRE MORTMAIN SYLVESTRE*

(John Henry Research Institute, Five Rivers, Oregon)

ABSTRACT: White adult male humans were exposed over a period ranging from 6 months to 20 years to sublethal field levels of 2,4,5-T and its extremely toxic contaminant 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), known to accumulate in food chains.[1] Open-field behavior of subjects was significantly affected.

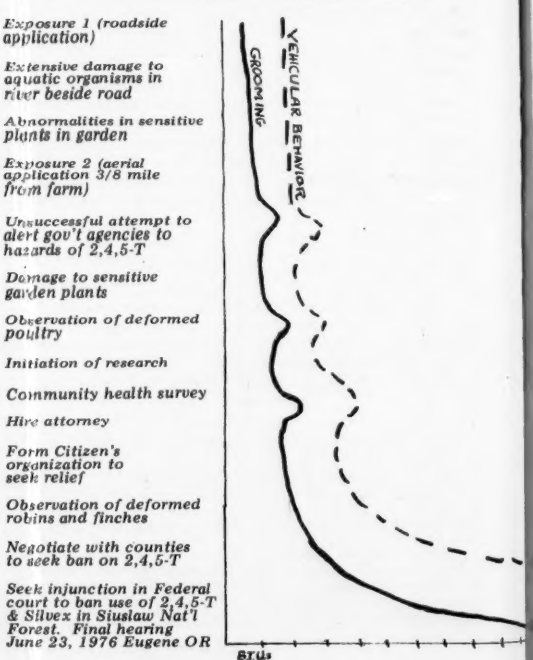
Agricultural chemists, herbicide applicators, and Forest Service silviculturalists claim that their biocides are harmless. Those who live where the herbicides are applied and see and experience their effects feel otherwise. Whereas agricultural chemists feel free to extrapolate from experiments on animals other than man whenever to do so can make herbicides look safe, they do not extrapolate from studies that suggest severe hazards, and indeed seem to be unaware of these studies.

This is but another demonstration of the problem of extrapolation from animal experiments to man. Whereas Sjoden and Soderberg[2] found that maternal exposure to sublethal doses of 2,4,5-T increased the exploratory (i.e. ambulatory) behavior of offspring in rats with a concommitant decrease in emotional responsivity, the present study indicates that exposure of subjects (agricultural chemists, applicators, and silviculturalists) to sublethal doses of phenoxy herbicides results in increased vehicular behavior (operation of official motor vehicles: pick-ups, helicopters, trucks) and reduced ambulation, as well as decreased emotional responsivity, e.g., the statement, "In the past we have observed no-spray signs as a courtesy. This year we're going to spray right through them."[3]

Sjoden and Soderberg report: "Grooming has been suggested to be a reaction to novel stimulus situations, but as such not a manifestation of fear. Low levels of grooming have been reported to occur together with high defecation scores."[4] This would seem to corroborate observations of the present subjects, in whom peer approbation and financial reinforcement superceded concern for personal (and species) appearance and safety. An observer in New Zealand notes: "... this same (subject) fills his spare time ... by spraying 2,4,5-T on his and others' land. Subject spends between 400 and 500 hours per annum spraying. Now this act in itself is not an uncommon occurrence during these chemicaled times but I did take note of an attending result: a latent dysfunction, if you will, for this gentleman and his (wife), who gave birth three years ago to Johnny, a boy of normal mental capacity, but born with severe physical defects. Specifically: neither of his two hands are fully formed, with just two little 'fingers' on one hand and a partially formed thumb and finger on the other. As for the feet, suffice it to say that he requires artificial feet-shoes, so that he may move in his own way ... That his parents fail to make the incredibly obvious connection defies the rational process which they both claim to use in normal activities."[5,6]

Indeed, the authors of the present study have themselves experienced a similar increase in grooming and vehicular

Figure 1. Authors' response to exposure to 2,4,5-T.


Exposure 1 (roadside application)
Extensive damage to aquatic organisms in river beside road
Abnormalities in sensitive plants in garden
Exposure 2 (aerial application 3/8 mile from farm)
Unsuccessful attempt to alert gov't agencies to hazards of 2,4,5-T
Damage to sensitive garden plants
Observation of deformed poultry
Initiation of research
Community health survey
Hire attorney
Form Citizen's organization to seek relief
Observation of deformed robins and finches
Negotiate with counties to seek ban on 2,4,5-T
Seek injunction in Federal court to ban use of 2,4,5-T & Silvex in Siuslaw Nat'l Forest. Final hearing June 23, 1976 Eugene OR
GROOMING
VEHICULAR BEHAVIOR
ERUPTION

Citizens Against Toxic Sprays (CATS) is a treeroots organization, daring to venture quasi-scientifically into an area of growing concern to us all. Could be that the nice goop which got rid of all those messy weeds along your fenceline is also responsible for the cramp in your guts that keeps you awake at night. Most working scientists don't raise much stink about herbicides because they are working for the industry that makes and sprays the stuff. All power to the poisoned. The Hoedads (CQ Summer '76) have contributed some money to CATS.

—J.D. Smith

*The "authors" of this article have been sprayed with 2,4,5-T and may have been suffering from the effects they were studying; however, all references and facts are real and may easily be verified.

G. Russ Youngreen

behavior and the use of other exosomatic instruments (i.e., libraries and courts of law) since exposure to 2,4,5-T applied in forestry and right-of-way management in the area surrounding their farm. (See *Figure 1*). Again we see that synergism between man's exosomatic evolution (his tools, chemicals, money, society and textual verbal behavior) and his endosomatic evolution (body, and vocal verbal behavior) whereby changes in exosomatic evolution tend to be self-validating and self-perpetuating via their effects on man's body.[7] The son of the applicator from New Zealand will find it easier to rely on helicopter or spray truck than to use brush-hook or hoe. A more mundane statement of this effect would be: "Bad health is good business."

At a time of dwindling fossil-fuel resources, it is interesting to note the relationship between entropy and exposure to 2,4,5-T. After such exposure, entropy was increased by the behavior of both authors and subjects; however, this increase was functionally related to a decrease of ignorance in the authors and an increase of ignorance in the subjects.[8]

There seems to be a complete disagreement in the literature with regard to the significance and interpretation of this behavioral problem. A great deal of money is made available to induce people to use chemicals and machinery in agriculture and forestry. None is made available to induce them to use their limbs. The chemical industry spends $2.3 billion a year in advertising. The Supreme Court recognized that positive inducement can be as irresistible as aversive measures when it ruled that "the power to confer or withhold unlimited benefit is the power to coerce or destroy." (U.S. vs Butler, 1936) However, a year later in Steward Machinery Co. vs Davis, the Court reversed itself, saying that "to hold that motive or temptation is equivalent to coercion is to plunge the law into endless difficulties."[9]

We are encountering some of these difficulties. ■

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Just the Facts

Spring comes to the Northwest: goldfinches sing in flight, fawns are born, mergansers nest on the river bank, a flush of green covers the alder hills, and Forest Service helicopters clatter over, spray booms lowered, drenching all with a mist of poison droplets.

Every spring for twenty years this has happened, as the Forest Service employs herbicides over thousands of acres to kill unwanted vegetation in stands of fir and on replanting sites. Private timber holders also spray their land, and the Forest service and other agencies send out tank trucks to poison the plants along many miles of roads.

Every spring, old people and children in forest valleys sicken with lung ailments. Fishermen notice the rivers awash with dead crayfish and ducklings. Women suffer from unusual uterine bleeding and gynecological problems. Loggers and tree planters working in the forest find deer, elk, mountain beavers and other animals dead on the spray sites. In the counties where these sprays are used the incidence of spontaneous abortions and birth defects is considerably higher than in counties where spraying is uncommon. Every spring people's complaints are met with arrogance and contempt by the Forest Service, which – without ever having monitored the health of inhabitants of sprayed areas – claims that no ill effects have ever been suffered by the inhabitants and that the sprays are safe.

What does a manufacturer of war-chemicals do when there is no war? Find a use for its product at home, of course! Today, 2,4-D and 2,4,5-T, alone or in combination, have become "indispensible" tools of forest management in the U.S. The Forest Service and the manufacturers claim that present formulations of 2,4,5-T contain substantially less dioxin (TCDD) – the contaminant blamed for most health effects – than Agent Orange. TCDD is one of the most toxic substances known to man; in almost immeasurably small doses – parts per trillion – it can cause severe birth defects including cleft palate, spinal bifida and others. It has been estimated that 8 millionths of a gram ingested by a pregnant woman could cause birth defects in her child; thus the amount of TCDD sprayed on each acre at the lowest rate used by the Forest Service, is sufficient to affect the unborn children of 12 women. Additional pathological effects include prenatal and post-natal hydronephrosis, kidney and thyroid degeneration, growth inhibition, immunosuppression (reduced immunity to disease), thymic atrophy, leukopenia, thrombocytopenia, anemia, hepatic cellular necrosis, inhibition of biliary excretion, proliferation of hepatic smooth and rough endoplasmic reticulum, and induction of hepatic microsomal enzymes.

Unfortunately it is expensive to stop your own government from poisoning you; C.A.T.S. has met its considerable legal and research expenses with funds contributed by its own members, but court costs will be more than this group of citizens can manage. C.A.T.S. seeks members (from any area) who share its views. Contributions of $5.00 or more will secure membership. For the price of postage and photocopying, C.A.T.S. will send to interested persons copies of any or all of the documents and studies it has amassed in many months of research. C.A.T.S. also begs any persons who have suffered from these sprays or witnessed their misuse and/or effects on crops, wildlife, domestic animals, etc. to relate their experiences to C.A.T.S. C.A.T.S. solicits aid in the form of expert testimony and published or unpublished material relating to herbicides from qualified individuals.

Citizens Against Toxic Sprays, Inc. Membership - $5

Route 2, Box 190 & Route 1, Box 14

Tidewater, OR 97390 Deadwood, OR 97430

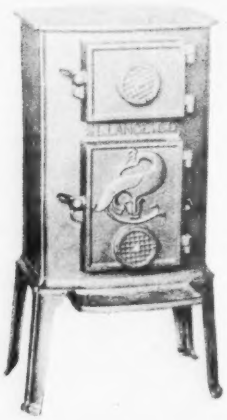
The Lange wood stove

Among all wood-burning heat stoves, the Scandinavian ones are recognized as the best – most highly evolved design, best construction. And of the Scandinavian stoves – Jøtul, Trolla, and Lange – it now appears that Lange is the best. An example of the carefulness of their construction is the critical metal-to-metal seal when the inlet damper is closed. A man with a hand file and some marker ink at the factory insures by hand that each seal is perfect. By contrast, the next best stove, the Jøtul, uses an asbestos seal which has to be replaced.

Langes are solid, lifetime stoves. I have one.

–SB

Catalog
Free
from:
Scandinavian Stores, Inc.
Box 72
Alstead, NH 03602



Lange Coal Stove
Model 6304 RA

$310 enamel

•

Where the objective is space heat with a minimum of fire-tending, more people ought to consider coal. This is especially true for people who must be away all day at work, or who have difficulty finding or storing wood. When you get the knack of running it, a coal stove will operate quite effectively on two fuelings per day, one in the morning and one in the evening.

Lange Model 6302K

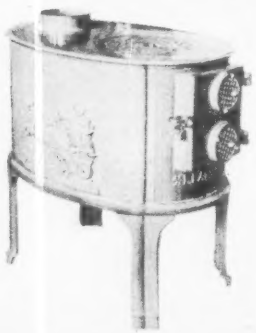
$595 black
$725 enamel
(blue, green, black)

A new Lange, it also cooks and bakes.

•

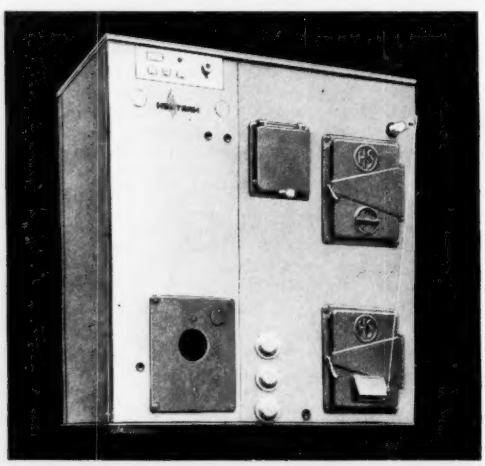
If you cut trees in summer, let them lie awhile. Until the leaves wither, they will draw moisture from the wood, drying it more quickly than if you limbed the tree immediately.

•



Lange Model 6303A

$250 black
$295 enamel



A beautiful woodburning boiler

Anyone contemplating wood heat ought to know about the HS boiler. It's made in Denmark and imported by Tekton Design Corp., Conway, Mass. 01341. The HS burns wood or oil to fire a hot water heating system. It heats the house and provides domestic hot water, all for a very reasonable price. For example, quality wood furnaces that I know of run $2000 to $3000. The HS is available in three sizes for $1200 to $1675, including oil burner. And it's a very well-made piece of equipment. The idea is this: Most people buying it would want to use wood for the major part of their heat. But if you go away for the weekend and the wood fire goes out, the oil burner automatically cuts in to keep your pipes from freezing. An elegant device, easing the transition to a less-affluent age.

–David Lyle

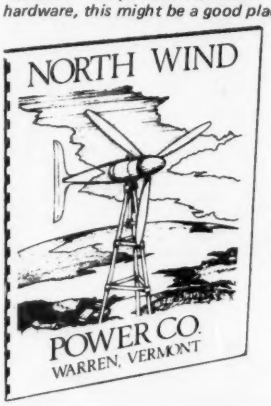
Woodburning gossip has it that the HS boiler is twice as efficient as the Riteway, which is the only other wood-burning boiler in America. The reviewer, David Lyle, is the entrepreneur of Scandinavian Stoves, Inc. (above). He used to be a journalist with regular articles in Esquire *and such places. How the mighty have risen.*

–SB

North Wind Power Co.

At this writing, the Jacobs wind machines remain the best available despite the 40-year old design. Finding a used one is not easy, and restoring it requires special knowledge and skill. This outfit offers reconditioned used machines and related equipment, and also offers parts for restorers. Their prices reflect the demand for this equipment, and the fact that they are apparently able to get the prices asked is something of an indicator of the quality of the more "modern" competitive machines. If you need really good hardware, this might be a good place to look.

—J. Baldwin



North Wind Power Co.
Catalog
$2.00 postpaid
from:
North Wind Power Co.
Box 315
Warren, VT 05674

WIND GENERATORS
Reconditioned Jacobs Wind Electric Plants FOB Warren, VT

Cat. No.	Capacity	Voltage	Price
apc-J-47	3000 watts	120 volt	$5250.00
apc-J-45	2500 watts	120 volt	3750.00
apc-J-46	2800 watts	32 volt	3050.00
apc-J-49	2500 watts	32 volt	2750.00
apc-J-50	2000 watts	32 volt	2250.00
apc-J-51	1800 watts	32 volt	2050.00

Accessories for Jacobs Wind Electric Plants

Propellers		
apc-GK-12	for fly-ball governor	400.00
apc-GK-14	for blade-actuated governor	400.00
Blade Actuated Governor		
apc-GP-11	Governor & new props when purchased with wind plant	800.00
apc-GP-12	Governor and new props when purchased separately	1050.00
apc-GP-13	Governor alone	600.00
Solid State Controls		
apc-SS-1	for 110 volt plants	300.00
apc-SS-2	for 32 volt plants	300.00
apc-DLS-9	Dynamic Loading Switches	120.00

That Nebraska Windmill book — too funktional?

There hasn't been much noticeable reader response to my favorable review of **Homemade Windmills of Nebraska** *(CQ, Spring '76 — they've sold only 16 copies). Often a kudo results in a significant sales increase for the book or whatever mentioned (***SystemANTIC** *had to do a new printing after we reviewed it.) Why not in this case? Does a windmill have to be 100kw and be made of titanium to rate consideration as serious? What's going on here? (Incidentally, the new price, a reduction, is $3.00 — from Farallones Institute, 15290 Coleman Valley Rd., Occidental, CA 95465.)*

—J. Baldwin

Wind Energy Utilization

Yup. Who, when and where, plus energy-saving abstracts. If you're serious about wind energy and want to know more, this is where to find more.

—J. Baldwin

Wind Energy Utilization
(A Bibliography — 1944-1974)
Technology Application Center
University of New Mexico
1975; 496pp.

$10.00 postpaid
from:
TAC, University
of New Mexico
Albuquerque, NM 87131

W74 60011
Scorer, R.S., Wilkinson, M. Waves in the lee of an isolated hill, Qua. J. Roy. Met. Soc., 82: 419-427, 1956. (HILL, LEE-WAVE)

An isolated hill produces a lee-wave pattern similar to that produced by a ship moving across the surface of deep water. It is confined within a wedge-shaped region, the corner of the wedge being vertical and through the hill top. The half-angle of the wedge depends upon the air stream characteristics but is typically 15 degrees.

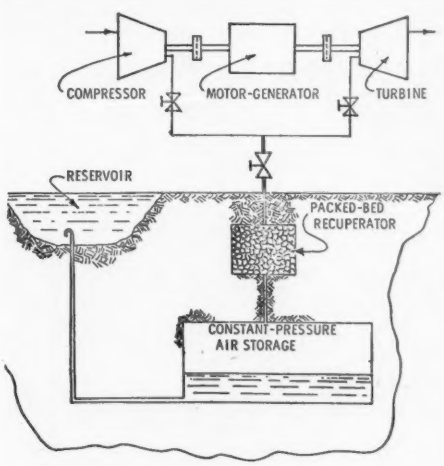
Wind Workshop 2

This huge document is the record of the second Workshop on Wind Energy Conversion Systems held in June, 1975. Since that time, the popular press has extracted many of the highlights, so you may not find too much new here if you've been following the scene. What might interest you, though, is the monstrous bureaucracy being hatched, and the manipulations of the large corporations as they dance the profit gavotte. It is also interesting to compare the rhetoric with the miserable performance of the NASA machine at Plum Brook. Not only has that machine suffered from problems predictable by any amateur who has actually built a windplant, it represents another expensive example of a new phenomenon in our society: the money grab evolved to the point where the artifact is not delivered in the specified form. (California's BART transit system is another example of this.) In the old days after all the graft and corruption was paid, the public at least got something that worked. [In this case, it's Lockheed again. . . .] Anyway, the book is a good information mine both for wind people and social scientists.

—J. Baldwin

Wind Workshop 2
1975; 536pp.
$10.00 postpaid

from:
The MITRE Corporation
Mail Stop W210
Westgate Research Park
McLean, VA 22101



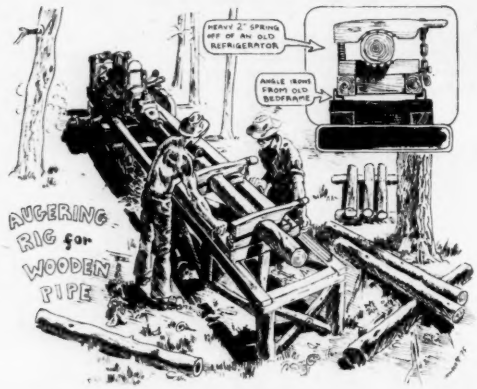
Constant-pressure, near-adiabatic compressed-air energy storage scheme

Country Comforts

"Designs for the Homestead" is the subtitle of this very fine presentation of designs for a wide variety of homestead needs as diverse as outdoor hotweather cook stoves and augers for making wooden waterpipes from logs. The designs are exceptionally well described with text, clear drawings and (a flourish of French horns please) photographs! This means, folks, that we have here real live designs actually done and proven, at last. Not only that, but the work has obviously been done by people that it would be nice to know. The book has been done by them too. It would be possible to pick a nit here and there, but on the whole this book sets a new standard for its breed. (See also the book by the same people on log houses, **In Harmony With Nature** *[CQ, Summer '75, p. 86].)*

—J. Baldwin

Country Comforts
(Designs for the Homestead)
Christian Bruyere and Robert Inwood
1976: 237 pp.
$6.95 postpaid
from:
Drake Publishers
801 Second Avenue
New York, NY 10017
or Whole Earth

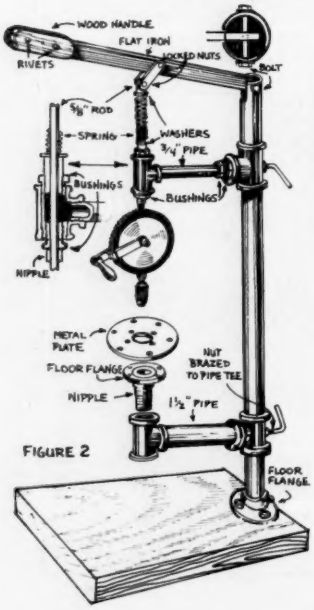


Railroad Tie Root Cellar

Cloudburst 2

A similar book of useful designs, but not all are proven and some are reprints from other publications. Nonetheless, there's a lot of useful stuff here for the make-it-ourselves people.

—J. Baldwin



Cloudburst 2
Vic Marks, ed.
1976; 128 pp.
$4.95 postpaid
from:
Cloudburst Press
1716 N. 45th Street
Seattle, WA 98103
or Whole Earth

A hand operated drill press

Building With Logs

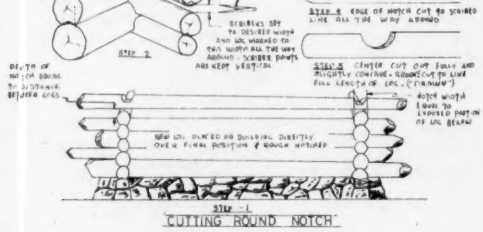
The most thorough manual on log house construction to date, as well as the only book which dwells on the Swedish Technique of building. The results achieved by the Swedish method are perfectly fitted wall logs without any intrusion on the natural character of the tree, no need for chinking and little insulation. The house produced has amazing durability and can last centuries if need be as well as having a strikingly dignified appearance.

—Neil

[We lost your last name and address. Please write for your $20.]

Building With Logs
B. Allan Mackie
1974; 76pp.
$8.00 postpaid
from:
B. Allan Mackie
P.O. Box 1205
Prince George, B.C. V2L 4V3
Canada

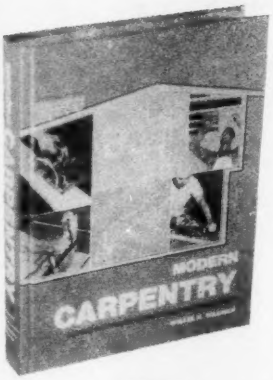
[Author also publishes a magazine, **The Canadian Log Builder.***]*



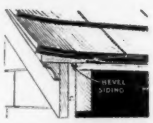
Modern Carpentry

This is the text that union carpenter apprentices use — a good book to go along with Ken Kern's **The Owner Built Home** *and Rex Roberts'* **Your Engineered House** *(CATALOG, p. 94).*

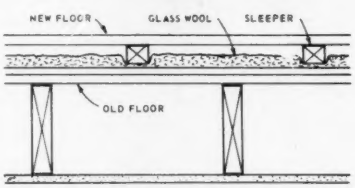
—David Rogers



Modern Carpentry
(Building Construction details in easy-to-understand form)
Willis H. Wagner
1969, 1976; 492pp.
$10.64 postpaid
(to schools, $7.98)
from:
The Goodheart-Wilcox Co., Inc.
123 Taft Dr.
S. Holland, IL 60473



Preventing drip from gable. A length of beveled siding gives an inward tilt to the shingles.



Soundproofing an existing floor

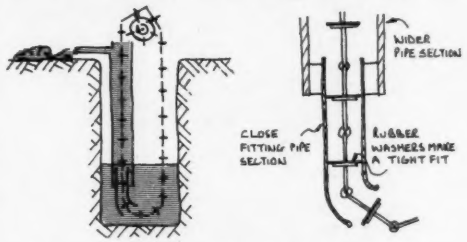
Chinese Chain and Washer Pumps

These simple pumps may be just what is needed for low-lift water pumping not only in less developed countries but for the homesteader. They can be ganged together to produce the volume needed for irrigation; difficult to do with most other designs. Presented in the usual ITDG competent manner.

—J. Baldwin

Chinese Chain and Washer Pumps
Simon Watt, ed.
1976; 49pp.
$2.15 surface
$3.80 airmail
from:
Intermediate Technology Publications, Ltd.
9 King St.
London WC2E 8HN
England

The accurately cut or rubber sealed washers make a tight fit in this section of pipe (which may be steel or plastic), and fit only loosely in the wider section of pipe above. The washers do the work of lifting in the close fitting section, reducing leakage to a minimum; in the looser and cheaper section of pipe above, they do no lifting work, but they also do not wear themselves out against the sides of the pipe in friction.



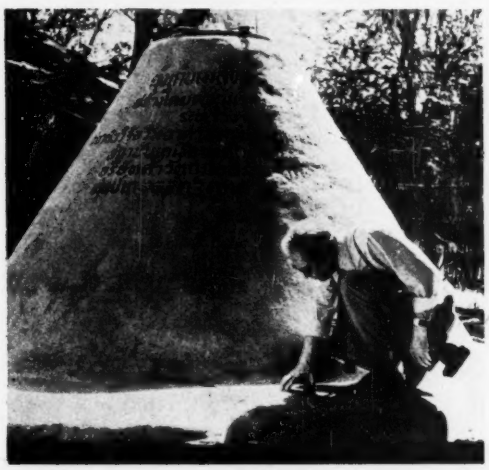
This is a most useful innovation. It might be possible to manufacture the washers and the lower pipe section in a workshop, then distribute them to local areas to be built into the locally made body of the pump. Other innovations include a bell mouth entry at the bottom of the pipe to guide the washers into the pipe, and a non-return ratchet on the chain wheel to prevent the chain from running backwards under the weight of water in the pipe.

Ferrocement: Applications in Developing Countries

Though this book has been around for awhile, it has just come to our attention. Some of the most difficult technical problems for developing countries (or homesteaders) are solved using ferrocement technology. That technology is within the reach of many, as it is labor rather than capital intensive. The book is not a manual, but shows the possibilities as applied to food and water storage, boats and roofing. The food storage bins, for instance, can radically cut the 25% loss to rodents that is the general rule in many countries. Hollow ferrocement walls might be good solar storage?

—J. Baldwin
[Suggested by Meredith Foyle]

Ferrocement: Applications in Developing Countries
National Academy of Sciences
1973; 89pp.
Free
from:
Board on Science and Technology for International Development
Office of the Foreign Secretary
National Academy of Sciences
2101 Constitution Avenue
Washington, D.C. 20418



Severe floods on a village farm in Thailand floated this silo off its earth foundation, but it was reset, still dry inside and undamaged, when the floods subsided. This ability to resist vagaries of foundation conditions is an important characteristic.

WELLS' OFFICE – BACK DOOR

The hillside exitway is barely seen in this shot from across the dirty stream, but not one dime was spent on this landscaping. We spread mulch on barren subsoil after we covered the building, went away, and returned to find the work all done.

Underground Architecture

BY MALCOLM WELLS

Invariably, after each of my lectures, there will be among the people who come forward to touch the hem of my garment someone who with great pride will divulge the information that he lives underground. Knowing the odds involved, I find it no risk to ask, "Underground, eh? Hey, that's great. How many feet of earth do you have on the roof?"

I know pretty well what the answer is going to be: "On the *roof*? Oh. No. It's not that kind of an underground house. I just live in a basement apartment."

Other people tell me about "underground" buildings that are in fact merely bermed (banked with earth on one or more sides), or set deep into the ground and covered with fountains and plazas instead of plants and animals. A lot of new university buildings are built this way. Their designers try to soften the effect by adding little planter-beds, or hard rectangles of grass, to the dead planes of paving materials on the roofs.

Don't get me wrong, though; basement apartments, or bermed houses, or sunken libraries aren't all bad; they tend to go easy on energy, and they cast very few shadows. But *under ground* they are not.

And then there are the other people among the after-lecture crowds, the people who ask what they think are subtle questions about the need for psychological studies of a typical person's reaction to underground living. I know what they're picturing: damp dark slimy suffocating mouldy crawly slithery spidery Dracula coffin death in eternal utter darkness.

They weren't listening to me, in other words.

Malcolm Wells is an architect, writer, and solar consultant in New Jersey. His address is: Box 183, Cherry Hill, New Jersey 08002.

–SB

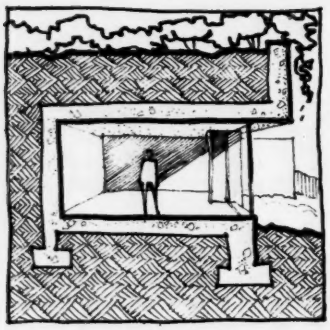
There I stood, describing in the most eloquent of words and showing in the most brilliant of colors a hundred pictures of bright, sunshine-filled buildings with their windows opening from the sides of hills, or into sunny, sunken gardens – buildings covered with the most luxurious and beautiful kinds of plant growth – and half my audience went home thinking I was talking about tunnels and basements. It's what you call hardening of the brain, and it affects us all, young and old alike. Once that trigger-word, "underground," is spoken it hardly matters what kind of pictures I show; half the people are going to sit there re-living childhood horrors no matter what.

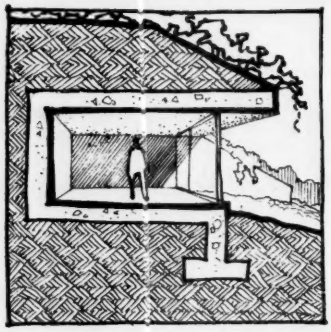
All underground architects have to deal with this phenomenon. Most deal with it by changing the name of what they do. You should hear some of the word constructions they're trying to float . . . terrasolatrium architecture . . . terratecture . . . geotecture . . . topotectonic platforms (cross my heart!, to be designed, I suppose, by registered topotectonitects) . . . earth-sheltered architecture . . . earth-integrated architecture . . . anything but that awful word that makes little shivers run down human spines.

I even tell lies myself. I hear myself telling people the main reason to build underground is energy conservation, and I talk a lot about all the money and natural resources you can save. Or that underground buildings are so quiet. Or that I build them to reduce the rainwater run-off invariably associated with impervious roofs. Or because all the sea and land surfaces of the earth were meant to be home to green plants and not to asphalt and concrete.

All those reasons are true – and terribly important – but none is my main reason for going under. I'm always afraid to mention the real reason for fear it will seem frivolous and drive people away. So I wait until I know I'm among friends before I admit I do it primarily because it is so beautiful. *Please do not tell anyone this secret reason!*

Architecture, even the good stuff, has always seemed somehow brittle and naked to me. Unfinished. Like prosthetic devices scattered across the land. For ten wasted years I cranked out that sort of junk for one of the big





BETTER, BUT STILL WRONG

Overhangs and indoor/outdoor walls look great but they give buildings what Warren Stetzel calls "energy nosebleeds". Frank Lloyd Wright, where are you now that we need you? Somehow, we've got to find new ways to create horizontal emphasis and continuous planes, those two great attributes of a humane architecture.

THE WRONG APPROACH

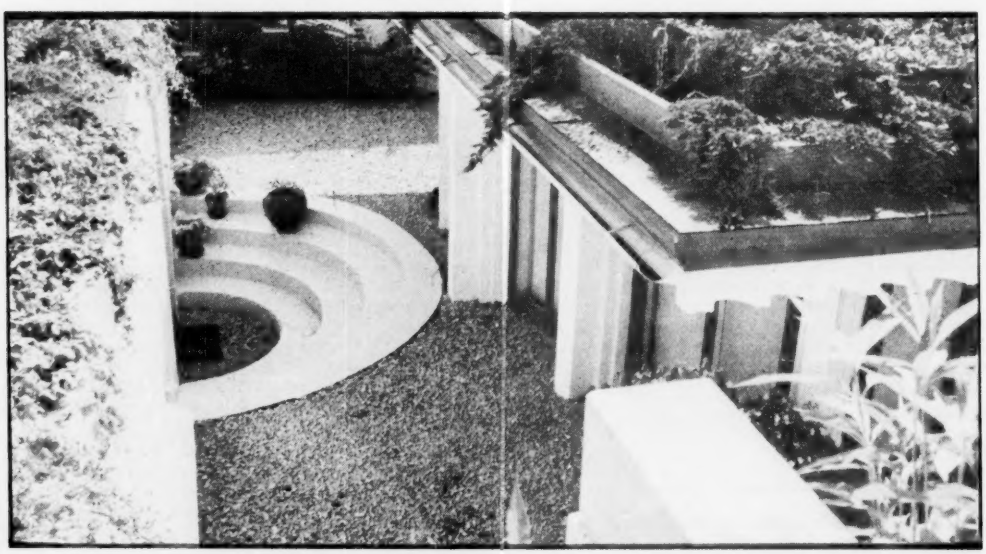
Don't try to retain earth with big structural parapet walls. That's only asking for trouble. Expansion and contraction, plus ice damage, can take all the fun out of a building like this. And that massive structure can bleed a lot of heat out of it, too.

multinationals, scattering offices and factories all over the western world. But doing them gave me a chance to see some very old and very beautiful cities, and that made all the difference. Only in the most ancient and overgrown of them did the buildings begin to take on that vine-and-wildflower kind of adornment you might call planetary appropriateness. The less people interfered, the more the living world moved in and took over. "All work," said Henry Thoreau, "passes out of the hands of the architect into the hands of nature, to be perfected."

You might think the wildflowers were trying to tell us something.

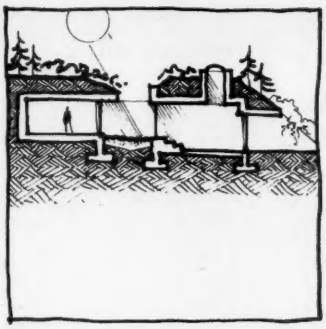
When I finally got the message it didn't take me long to imagine how beautiful underground architecture could be. Living rooftops! Buildings back in the earth again, where they belonged. And, to my surprise and delight, underground architecture turned out to be even more cheerful and beautiful than I'd dreamed.

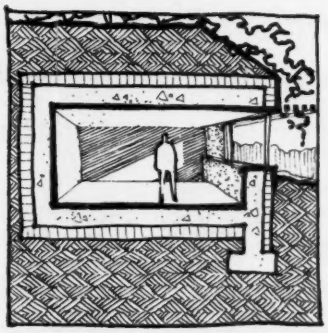
I don't know what color my office roof will be this fall. Last fall it was a solid yellow, done in masses of wild sunflowers. It was so intense it seemed almost to pulsate. Then, a few weeks later, it turned a hundred shades of gold as frost after frost went to work on it. Right now (the first week of true solar summer, mid-May), everything on the



ANOTHER WORLD

Wells' office courtyard: light-years away from the freeway twenty feet from its wall. Earth-covered houses in the city can have silence and privacy in spite of great population density.





THE RIGHT APPROACH

An externally insulated structure, smaller windows (with easily-moved insulation panels to protect them), and freestanding trellises or canopies instead of cantilevered eyebrows. Wrapped in insulation and protected by the very slow-changing mass of the surrounding earth, a building of this type exists in an almost steady-state condition. The more massive the structure the more stable and long-lasting the energy storage capacity of its mass.

THE WELLS OFFICE AT CHERRY HILL

Unknowingly, I built a heat-bleeder. The parapets and overhangs taught me a lot about earth-covered buildings that first winter (1972). I had to do a lot of retrofit insulating before the heat bills shrank. But the silence . . . ! Even in the open courtyard the roar of the next-door freeway is muted. Birds and sunlight and wildflowers; a tiny oasis in a plastic city.

roof has been tinted with the tenderest and at the same time the most intense shades of green imaginable. We've had a lot of rain, and the roof looks very happy indeed. So does the wildlife. And not one weed has ever appeared.[1]

Cherry Hill, New Jersey, is a lavishly rich, trashy suburb of nearby Philadelphia. My office is a tiny place on a tiny lot, wedged between a freeway and a sewer. When I bought the property (for $700!) all I could see were a few scabs of old asphalt on a patch of barren subsoil. It was dead; all the way down the scale from forest to woods to farm to suburb to abandoned highway construction yard.

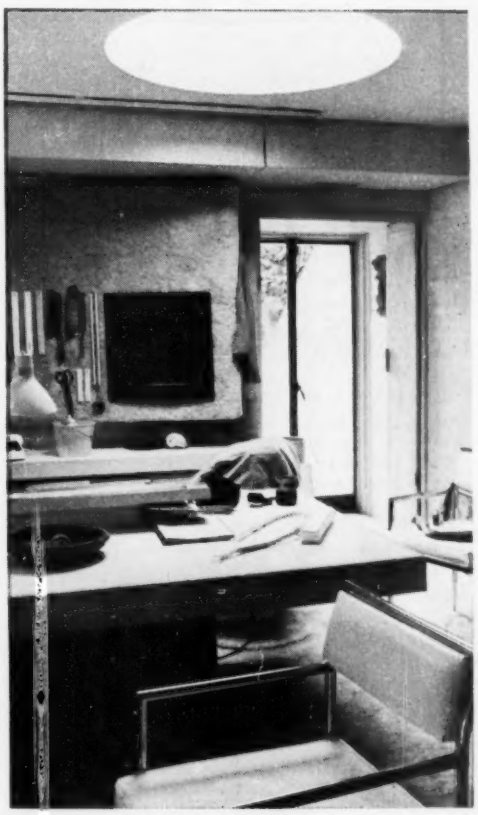
Now, five years later, it's almost a jungle, even though no topsoil and no fertilizer have ever been used, and a building now underlies almost half the rootspace. The secrets: plenty of mulch and a few key starter-plants. (And, well, maybe we did do just a little weeding, if I must tell the truth, but only enough to establish an artificial diversity until a more natural diversity could reestablish itself.) Now, when we tell our clients how to find choice building sites we always urge them to pick the *worst* ones, not the best, as we were always taught to do. Now people can see for themselves how easy and how gratifying it is to restore a bit of this trampled continent.

The biggest surprise here was the wildlife. How some of it managed the trip I hate to imagine, with that godawful six-lane highway to cross, but get here it did. We have squirrels, rabbits, a groundhog, snapping turtles, box tortoises, possums, rats, mice, moles (speaking of appropriateness), insects, and 23 squadrons of birds. One visitor even claimed to have spotted a Yeti, but that particular sighting is still not considered official.

We feed the birds, of course, but we fed them at the old office next door, too, and they never came in such profusion. Cardinals, redwings, mockers, doves, tits, grackles, starlings, chickadees, juncos, sparrows, pheasants, robins, and jays. I'd heard that all you had to do was provide a habitat in order for wildlife to reappear, but I never really believed it, not until I saw it for myself. Now, after only a few years, many of these animals think our sunken courtyard is their rightful home, and a lot of human visitors have been startled to see a rapidly departing rabbit going up the very steps that they were going down – or to

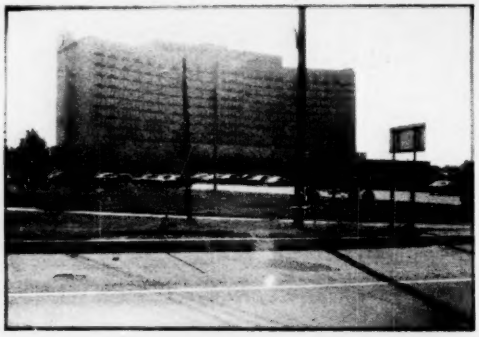
[Text continued on page 90.]

1. **Weeds are unwanted plants.**



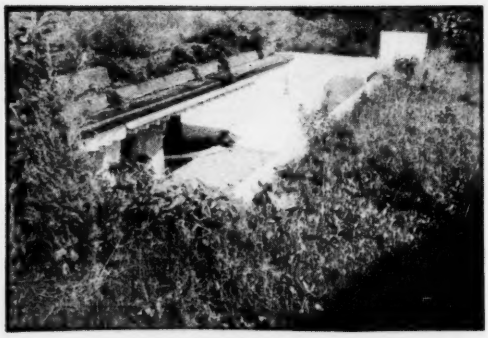
SUNLIT INTERIORS

Four feet of earth lie atop this roof slab, but with sunlight pouring in from above, and through the hillside windows, no basement mood is sensed.



TWO SIDES OF A HIGHWAY – EAST

The conventional way: concrete, glass, asphalt, and grass. We may not be able to afford this much longer.



TWO SIDES OF A HIGHWAY – WEST

Architecture at peace with nature, and saving energy like mad.

IDEAL BUILDING SITE

Dying land waiting to be restored to life. The price: low. The prospects: silence, privacy, wildlife, clean water, wildflowers, more and more topsoil, less and less erosion, lower and lower fuel bills.

IN THE ROARING TRAFFIC'S BOOM

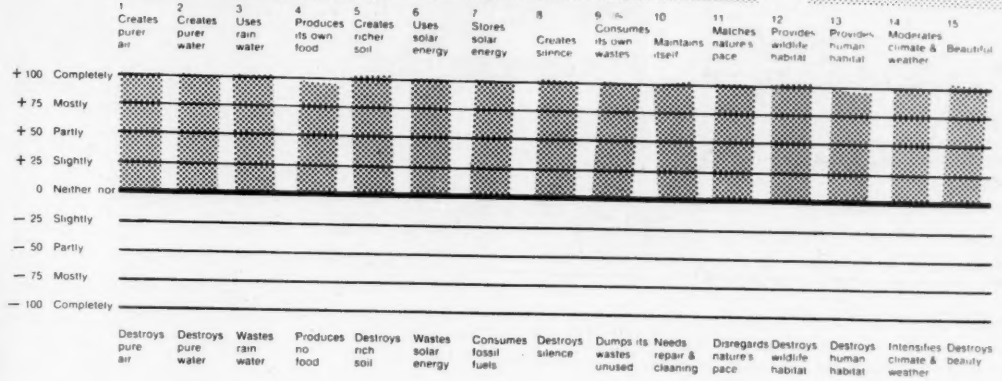
In the silence of my lonely room I smile sometimes at how lucky I am to have stumbled onto an architecture that does all those good things and turns out to be silent as well. My silent office is just 22 feet from the spot where this picture was taken.

SUN AND SHADE

No two minutes are ever alike down in our sunny courtyard. The offices facing this open space change moods with every passing cloud, every passing hour, every passing season. We went into the earth – and found ourselves more in tune with the sky!

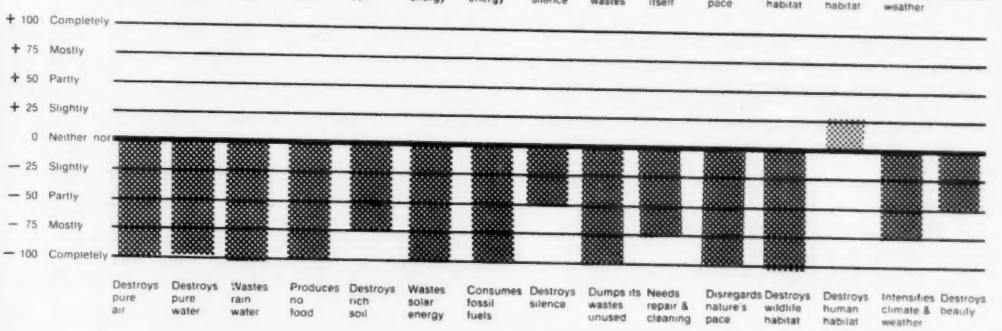
Wilderness

+1500



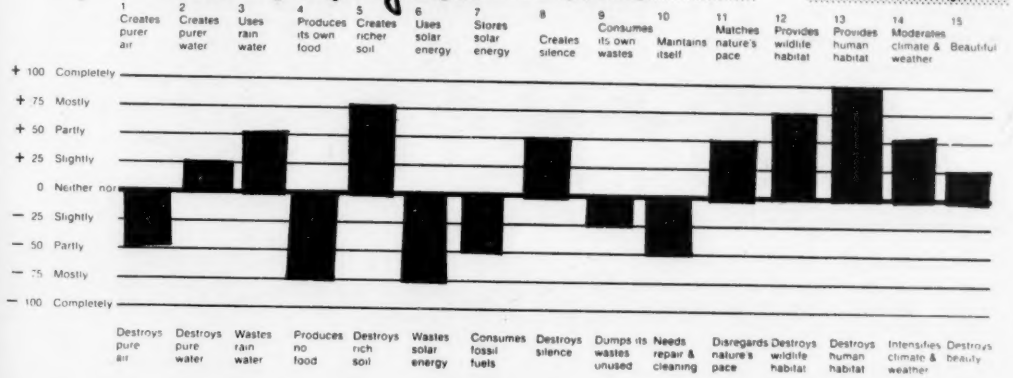
A Typical Modern Building

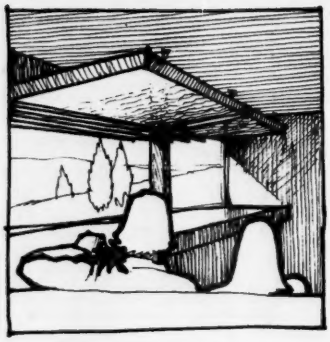
(minus) −1150



⇨ Wells' Underground Office

+125





THE WHITEHEADS AT HOME

Dick likes windows. So does Jane. But they know how much heat windows lose. That's why they told their builder to make the windows small, and to provide thick insulation panels they can close on winter nights and other times when they want to stabilize interior conditions.

WHERE'D THE HOUSE GO?

Under the hill. The freestanding trellis shades the window band in summer, lets sun through in winter. Indoors: silent, sunlit rooms overlooking a reemerging native landscape.

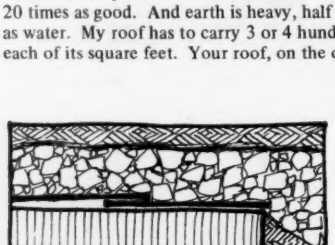
see a flock of birds doing Kamikaze dives into solid earth (the open courtyard is out of sight as you approach the building). The place is jumping.

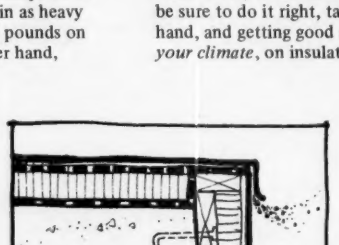
I could get just as excited, I suppose, about living in a cabin in the hills, or on a seaside cliff, but there isn't room for us all out there anymore. And besides, we've got to heal the city-wounds.

Underground buildings can help. They offer so much silence and privacy they can provide high density accommodations with no loss of their inherent greenness. I see no reason at all why high-density, solar heated low income housing can't be as green and as beautiful as parkland – right in the middle of the city – with far lower energy and maintenance bills than now seem possible. There's still a lot to learn about this ancient way of building, but even at this stage all the signs say "do it!"

Earth is a lousy insulator. Urethane foam is perhaps 10 to 20 times as good. And earth is heavy, half again as heavy as water. My roof has to carry 3 or 4 hundred pounds on each of its square feet. Your roof, on the other hand, usually carries no load at all, although building codes require that it be prepared to carry 30 or 40 pounds, just in case.

Earth is a lousy insulator, but it's a great moderator of temperature change. Warm it up and it stays warm a long time. Some people call this the thermal flywheel effect. Eight or ten feet below the earth's surface the rate of temperature change is such that most of the summer heat doesn't start getting through until about November, just when you start to need it. And the winter cold arrives around May. We energy-cheapskates here at this office are wearing sweaters in the middle of this freak (for May) 95° heat wave, luxuriating in the 61° temperature-of-the-week while people swelter outside, and race their air conditioners inside. It's that flywheel effect that's so nice. Combine it with the right kind of insulation and you can create a very stable situation. The main thing is that you be sure to do it right, taking all kinds of soil tests before-hand, and getting good advice, *from people who know your climate*, on insulation, vaporproofing and waterproofing.



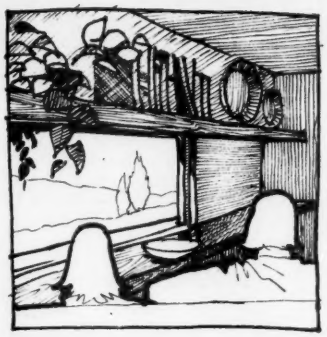


THE UNDERGROUND ROOF

From the top: mulch on earth on fibrous mat on drainage pebbles on protective boards on permeable, closed-cell insulation board on vapor-proof waterproofing on the structure itself. It's one of the systems that seem to have a lot of promise. We've had good results from 1/16" butyl sheets, but other people like the liquid-applied materials.

A TRICKY DETAILING JOB

If part of your roof is exposed to the weather you may want to put the roofing materials – the water-proofing – on the outer surface. Just be sure to provide vents for the water vapor that builds up over and under the insulation. Another problem: protecting the exterior wall insulation from things like baseballs. We often use cement plaster on metal lath nailed to treated wood members bolted to the structural wall. Notice that the wall insulation can be thinner as it gets away from the outdoor temperature extremes.



SUN-WARMTH AND EARTH-SHELTER

Cold north winds get rebuffed by the earth barrier, and sunlight is soaked up by southside windows and solar collectors. (Architecture, responding to the environmental imperatives.)

A MORE PRACTICAL WINDOW COVER

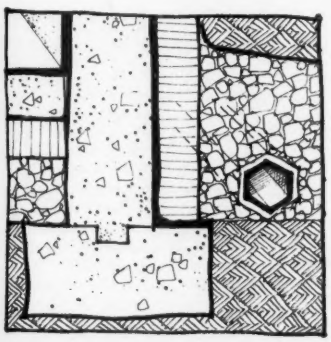
Hinged panels can be a problem, of course. That's why the Whiteheads decided to use tight-fitting sliding panels to insulate their windows when house-alteration time came around.

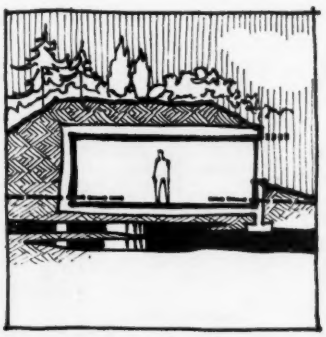
Underground temperatures are not, as I believed for so long, a constant 55° all over the world. I don't know what happens at 50, 100, or 1000 foot depths, but at the shallow architectural depths of a story or two the yearly average underground temperature is about the same as the yearly average air temperature at the place in question. Where I live, it *is* about 55°, which sounds like low heating, and zero air conditioning bills, until you remember what anyone who sits on the ground in early spring soon learns: 55° earth can bleed a lot of heat out of an otherwise warm behind. That's why we've learned to insulate against what now seems to be an endless heatsink, against all those tons of almost-but-never-quite-warm-enough earth outside the walls.

I could go on and on, of course, but sooner or later I'd begin to talk about the wonderful psychic equilibrium you can attain by having all these friendly masses of earth both above and below you, and if I do that you'll start to wonder if the old boy's mind hasn't begun to slide off the edge, down there in his sunlit paradise, so I think I'll stop right here. ■

Some of the most frequently asked
UNDERGROUND QUESTIONS . . .

1. **What about tree roots; won't they damage the structure?**
   In my four years of experience so far I've seen no indication of this. The horticultural experts I know explain it this way: roots seek water; if no water gets into, or through, the roofing sheet then the roots will have no motive for trying to do so.
2. **How much do underground buildings cost?**
   I could hedge on this and talk about life-cycle costs, but if you want to know about initial costs the indications are that the total construction budget must be increased by about ten per cent. The payback in energy savings, of course, can offset the initial cost increase in as few as ten years if conditions are right.
3. **What about earthquakes; are underground buildings safe?**
   Being a New Jersey architect, I can't say from direct experience, but underground buildings, being inherently stronger than conventional buildings,



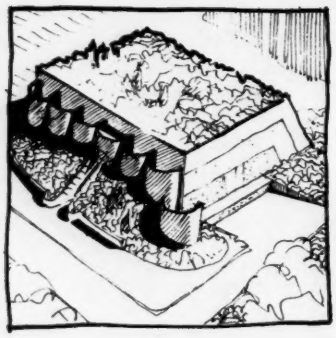


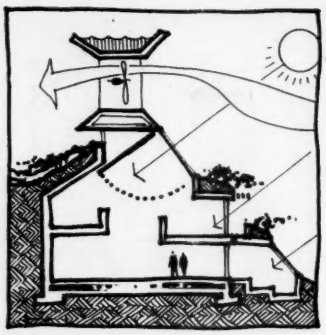
DON'T RELY ON PUMPS!

If the water table is high, build an artificial hill. When you see the way it bursts into life you'll know it's far less artificial then the stuff we've been throwing up all our lives in the name of architecture.

KEEP THE FLOOR DRY!

Inside the well-drained, waterproofed, insulated wall, the floor layers, from the top, should go something like this: slab on vapor barrier on rigid insulation on pebbled drainage bed on earth.





THE RAVEN ROCKS HOUSE IN OHIO

Electricity from the wind (top), heat from the sun – stored in the massive concrete structure itself, sunlighted interiors deep inside the hill, more heat stored in underfloor stone beds, greenhouses for winter food, sewerless toilets, and a water storage reservoir above the high wind funnel for fire protection and irrigation of the big summer garden.

THE CAMDEN COUNTY LIBRARY

Due for completion in mid-'76, this new library is already stopping traffic. Because of a very high water table, all three floors stand above ground level, but roof-top earth cover, and a three-story-high earth berm on the cold north side, give it many of the advantages of in-the-earth construction. Solar equipment on the sloped south wall will supplement the building's more conventional systems. Architect: Louis H. Goettelmann II. Consultant: Malcolm Wells.

SHELTER PAVILION

Earth-covered bike shelter and walkway pavilion in this New Jersey parking lot hints at future parking structures.

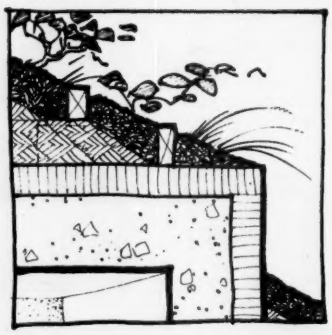
and being based on better-than-usual earth studies, should be much safer than above-ground ones. Fires and tornadoes, of course, are much less menacing to these buildings.

4. Aren't underground buildings depressing?

Go back and read the accompanying article. You weren't paying attention.

5. Don't underground buildings destroy the very sites they're intended to save? Aren't underground streams affected, too?

First of all, we refuse to build in mature forests, on prime agricultural land, or on wetlands and flood plains. Our goal is to restore dying land. And, as for subsurface conditions, the underground movement in architecture is so miniscule it hardly poses a threat, but the day may come when it could. No building should be attempted without rather detailed studies of the subsoil conditions. Such studies can help prevent most subsurface damage. And it seems likely that by the time underground buildings become even a minor force on the construction scene the body of knowledge being built up around them should be adequate to prevent underground damage of the kind we've inflicted above ground.

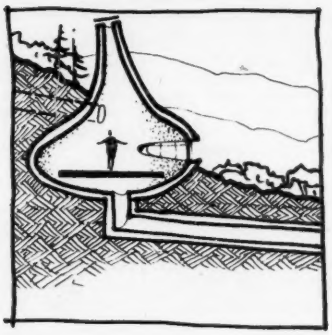


EROSION CONTROL

We've found that deep mulch, combined with temporary rottable step-curbs made of waste lumber from the building's construction, prevent all erosion, even in the heaviest downpours. Later on, deep root-mats take over the job the step-curbs started.

THE HOUSE-IN-A-VAULT APPROACH

Jay Swayze, of Hereford, Texas, has built a lot of underground houses. His approach: build a waterproof structural vault. His sunsets may be electronic but when World War III begins he'll have the laugh on all us windows-in-the-hillside people.



THE INSULATED EARTH POD (PROPOSAL)

We haven't had a chance to build one yet but all the indications say these cement onions, properly insulated and with earth pipes to temper both summer and winter air, can be tremendously successful. Cheap, too, if you build them yourself.

ANOTHER KIND OF MEGALOPOLIS (PROPOSAL)

Sun-terrace housing, a garden outside every door, cars and warehouses tucked away inside the hill where they belong. Powered by the sun and wind, recycling their wastes, such cities will give us brilliant skies and sparkling rivers again.

6. How much earth do you put on the roof?

Plant experts told me that I could expect to grow any native New Jersey tree on my roof if I used about three feet of earth. My office has 6" of mulch on about three feet of subsoil. It is a rare winter here that drives the frost as deep as 18". Having tried different soil mixes and depths, I now favor lighter-weight gardens with more mulch. Generally, about 12" of mulch on, say, 18" of light-weight (earth + vermiculite?) soil seems to be a good compromise. But in any case you must remember to replenish the mulch, at least until lusty growth occurs. Mulch tends to decompose and disappear. (Ah, if only shredded paper didn't look so much like litter on the roof!)

7. Doesn't all this take a lot of land? If you can't build high-rise buildings where will you put all the people?

Earth-covered buildings are so quiet and so appealing they offer us a chance to build very dense housing. Some of the most densely-populated parts of the world (The Netherlands, Greenwich Village, etc.) are low-rise areas, for the most part. If this were just a new *suburban* fad we wouldn't be so enthusiastic about it. Gentle architecture has got to apply to city and suburb alike – and soon, too – if there is to be any hope of reversing this insanity we call architecture today.

8. Aren't underground buildings damp?

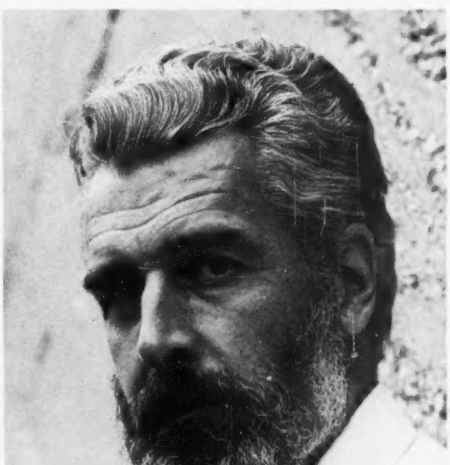
Yes, if their inherent characteristics are overlooked. Warm, moist summer air will drop its load of moisture on any cool surface, and underground buildings can have delightfully cool surfaces in the summertime. There are two choices: dry the air or warm the walls. The right answer depends upon too many factors to discuss here – building mass, local climate, type of occupancy, power sources, etc. – but that answer will almost certainly cost less in dollar and energy terms than any conventional architectural solution.

9. Isn't this a kind of non-architecture? Don't we need to have impressive and dramatic buildings?

If you want to see non-architecture, look around you. We've managed to pervert what was once a noble earth art. And as for impressive buildings, how would you rate a hillside ablaze with wildflowers – with windows looking out of it?

10. Isn't underground architecture more wasteful than above-ground architecture? Don't massive special structures use far more of our dwindling resources than light-weight structures do?

The subject at hand is life. To kill living land for 50 or 100 years by covering it with dead boxes and asphalt can in no way be favorably compared with building in such a way as to let the land not only survive but thrive for a century or two. And of course the energy comparison goes out of sight after ten or fifteen years. Don't be misled, the advantages of conventional architecture are just like the advantages of theft: large and immediate – if you disregard all moral considerations. Otherwise, there's no comparison. We've let a felony called conventional architecture go unpunished far too long. ■



Author Malcolm Wells

Housing By People

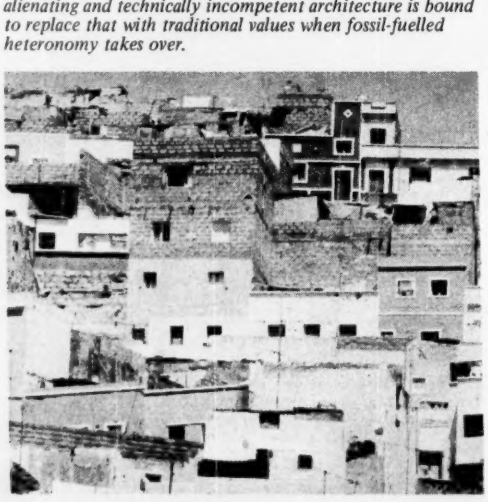
Quite simply, each and every Planner still at large in the several societies of this world should be made to sit out in the weather until he or she has read and acknowledged understanding the principles outlined in this little rapier of a book. The ideas are well illustrated with devastating examples of governmental inadequacy and beautiful examples of ordinary people at work on their own living accommodations. Mr. Turner is not alone in his views, and with more support such ideas will gain enough momentum to make a real difference for a lot of people. There was much talk along these lines at the United Nations Habitat Forum in Vancouver last June.

—J. Baldwin
[Suggested by Ian Hogan]

Housing By People
(Towards Autonomy in Building Environments)
John F.C. Turner
1976; 162
$4.50 (£2.25 + postage)

from:
Calder & Boyers Ltd.
18 Brewer Street
London W1R 4AS
England

The block of flats above is a few hundred feet away from the houses below. This example from Las Palmas, Canary Islands, supports the proposition that aesthetically hideous, socially alienating and technically incompetent architecture is bound to replace that with traditional values when fossil-fuelled heteronomy takes over.

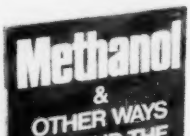


Methanol & Other Ways Around the Gas Pump

The possibility of making auto fuel from agricultural products, and why this technology is not being sufficiently supported, is explored in some detail. If you haven't read up on this subject, this will get you on the way. If you need detailed technical expertise, you'll need more than is offered here.

—J. Baldwin

Methanol & Other Ways Around the Gas Pump
John Ware Lincoln
1976; 134pp.
$4.95 postpaid
from:
Garden Way Publishing
Charlotte, VT 05445
or Whole Earth



Methanol is one of many products obtainable from dry biomass.

Turner is not a great believer in the value of books, (the present work was wrung out of him by Ivan Illich's admonition that he was burying his ideas under a lot of Peruvian mud bricks), but out of his past writings and speeches I have, without any authorization from him, distilled Turner's three laws of housing. Turner's Second Law says that the important thing about housing is not what it is, but what it does in people's lives, in other words that dweller satisfaction is not necessarily related to the imposition of standards. Turner's Third Law says that deficiences and imperfections in your housing are infinitely more tolerable if they are your responsibility than if they are somebody else's. But beyond the psychological truths of the second and third laws, are the social and economic truths of Turner's First Law, which I take from the book **Freedom to Build**:

> **'When dwellers control the major decisions and are free to make their own contribution to the design, construction or management of their housing, both the process and the environment produced stimulate individual and social well-being. When people have no control over, nor responsibility for key decisions in the housing process, on the other hand, dwelling environments may instead become a barrier to personal fulfillment and a burden on the economy.'**

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In the Mexican context anyway, the demand and will to invest in housing at lower income levels is far greater than that of the substantially higher, moderate income sector. It may even be that the prospects of fulfilling housing demands are generally greater for lower income households, because they are able and willing to build for themselves while moderate income households are not, even though they may earn two to three times as much.

Inexpensive Evaporative Coolers

This is the kind of paper I like to see. The authors have done a really fine job of developing not only a cooler but the technique of making it and the technique of making the component dip-molded blocks as well. They note that the dip-molding process can be used to make water pipe too, which might be an answer to homesteaders faced with high pipe costs. They've also taken into account the weather, economic and social conditions that make an evaporative cooler practical or not. It's all worked out for very low-income situations and very unskilled labor. Good job! This report should be taken as a model of its kind.

—J. Baldwin

Inexpensive Evaporative Coolers for Short Term Storage of Fruits and Vegetables
Bill Hutchinson and Roger Chuang
1976; 103pp (Xeroxed especially for CQ readers)

$5.00 postpaid
from:
Bill Hutchinson
1664 B. Carter Drive
Arlington, TX 76010

The Dip-Molding Process for Block Manufacture

The procedure for making a block is straightforward. A wooden frame is made to support the block. The frame is smeared with grease, kerosene or used motor oil to prevent the block from sticking to the frame. Next, strips of wet burlap or a similar coarse cloth material are dipped into a watery mixture of wet cement and molded around the frame to the desired shape and thickness. Seams and irregularities are sealed by smoothing over with cement.

The molded block is then allowed to harden for several days. The block should be covered with large pieces of wet cloth or burlap. This will prevent cracking of the outer surface caused by rapid drying of the cement. After the block has set up, the frame is then knocked apart and the block is ready for use. The frame can be re-used.

The most promising block material was found to be Type I (general purpose) Portland cement.

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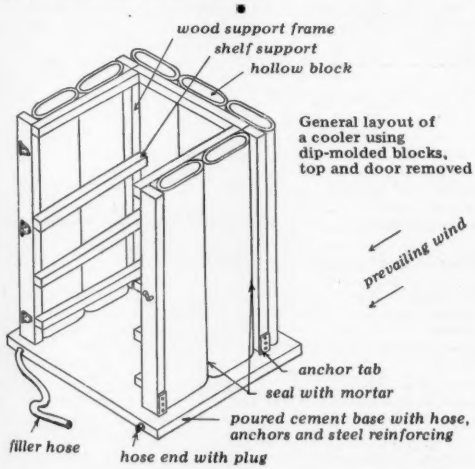

General layout of a cooler using dip-molded blocks, top and door removed

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New Village Level Industries

The dip-molding process allows individuals to make their own blocks and coolers. More importantly, it enables unskilled people with little capital to start their own block and/or cooler manufacturing business.

In addition, the process can be used to make pipe. Pipe can be formed by wrapping burlap dipped in cement around a lubricated mandrel with a slight relief angle. If the relief angle and length of pipe are sufficient, the small end of one pipe can be fitted into the large end of another to act like a ball and socket joint.

Theatrical Equipment & Supplies

Oh my goodness! A mouth-watering catalog of stage stuff, much of it easily adapted for other uses. (As you might guess, because stage equipment is by its nature always being adapted for this or that). Hide my checkbook!

—J. Baldwin
[Suggested by Dick Dillman]

Theatrical Equipment and Supplies
Catalog
$1.00 postpaid

from:
Mutual Hardware Corp.
5-45 49th Avenue
Long Island City, NY 11101

IMPROVED STAGE SCREW

The new Improved Stage Screw & Plug were developed to eliminate the destruction of stage floors. A 1/2 inch hole is drilled into stage floor to accomodate a threaded Stage Plug. A vise type thread on Stage Screw allows quick and easy insertion. An unused plug can easily be removed and the hole filled with a 9/16 inch dowel. Holding power is approximately 5 times that of any old style stage screw.

$1.50 each

IMPROVED STAGE SCREW PLUG

The new Improved Stage Screw Plug is designed to be used with the Improved Stage Screw. See explanation above.

$1.25 each

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BREAKAWAY BOTTLES

Our Breakaway Bottles are made of a harmless brittle plastic which looks and breaks like glass. User cannot get cut or hurt. Very realistic in full view of audience. Other breakaway products available upon request.

$10 each

By the toilet's last gleaming . . .

A sensational new bicentennial water saving device, inspired by jd's research, is being readied for town distribution — A toilet seat which, when sat upon, plays The Star Spangled Banner.

—R. H. Keigwin

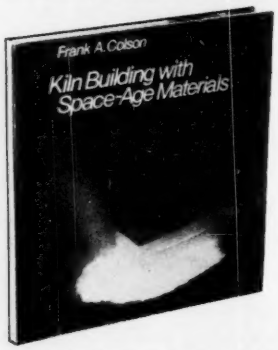
Reprinted from The Nameless Hearsay News.

Craft

Kiln Building With Space-Age Materials

Those of us involved in high energy high temperature crafts (I'm working in bronze casting as well as pottery) are severely affected by fuel shortages and costs. Since alternative sources of energy don't meet the temperature or aesthetic requirements of high temperature reduction firing (except wood firing which many rural potters are returning to) a more efficient method of using the fuel we have needs to be found. Colson introduced the ceramic-fiber insulations in an article in **Craft Horizons** *about six years ago. Now his book gives methods, sources of supply and proven designs that will allow us to continue to work with greatly reduced consumption of fuel.*

—Lee Ferber



Kiln Building with Space-Age Materials
Frank A. Colson
1975; 127 pp.
$11.95 postpaid
from:
Van Nostrand Reinhold
Order Dept.
300 Pike St.
Cincinnati, OH 45202
or Whole Earth

In the developmental stage of the United States space program, it was evident that it would be virtually impossible for a rocket to be launched off its pad if its firebox was lined with conventional firebricks. Materials had to be developed with extremely high heat insulating qualities combined with practically no weight. . . .

Among the most available and diversified of the materials are the alumina-silica ceramic fibers. Although there are several other types of ceramic fibers made from zirconium, quartz, and other minerals tolerant to high temperatures, the alumina-silica fibers are the most easily available and reasonably priced. Weighing one-fortieth the equivalent volume of firebrick, these materials have a normal heat exposure range of 2,300°F. Quite recently, new fibers containing 20 percent more alumina have been developed which have a working temperature of 2,600°F., well within the potter's heat range for stoneware temperatures. One manufacturer is presently developing an alumina-silica fiber with a heat tolerance above 2600°F. . . .

Since ceramic-fiber thermal materials became available, I have been using them as an integrated part of many kilns both for myself and other craftsmen. First I used the alumina-silica "blanket" as a partial replacement for bricks, and this alone cut fuel costs to one-fourth, firing time to one-third, and labor and materials to one-half for high-temperature reduction kilns.

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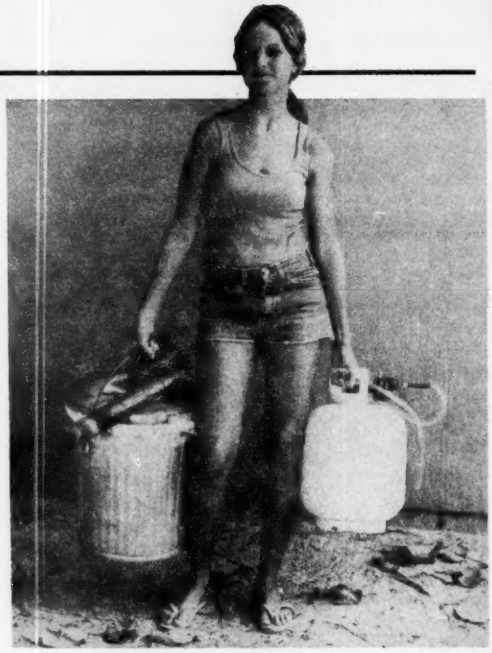
MAGNA 904 HEAT BAN

One of the most interesting recent developments in high-temperature insulation is a product referred to by the manufacturer as Magna 904 Heat Ban. This jelly-like compound will absorb and dissipate heat in the high-temperature range of 2,000°F. and higher and could theoretically be used as a skin covering that would protect the hands when they enter a heated kiln chamber. When heat comes in contact with Magna 904, it is absorbed into the compound in the way that a sponge soaks up water. Instead of becoming saturated with heat, the gel channels the heat through itself and releases it to the atmosphere like no other known material, according to the manufacturer. It does not become liquid or runny when subjected to heat; it retains the same consistency irrespective of extreme temperature changes.

The manufacturer claims that Magna 904 is nontoxic and absolutely safe to use on any material or finish. You can therefore put it on pottery surfaces, fire the pottery, and find the surface covered with Heat Ban relatively unaffected. It is most effective, however, when you use it as an external heat protection that absorbs and disperses the heat into the atmosphere.

from:
Magna Alloys
Blackwall Point Rd.
Drummoyne, N.S.W. 2040
Australia



The Portable Raku Kiln

Building Pottery Equipment

I wish I'd had this book around when setting up my own studio. You don't need special skills with tools, just determination, time and patience. Instructions, lists of tools, illustrations for each project (different types of wheels, kilns, and other workshop equipment) are clearly stated and carefully detailed step-by-step from beginning to end. The section on workshop layout includes photographs and diagrams showing the workshops of several potters and one school shop. And the appendix has, besides the usual temperature conversion tables, things like a table of electrical wire color coding, illustration of standard brick sizes and skews, and a "basic instructions" page telling how to mix concrete, make a pencil compass, among other pieces of esoteric but solid information. A highly useful book for the resourceful potter.

Elina Holst Levy

Building Pottery Equipment
Roger Harvey and
Sylvia & John Kolb
1975; 208 pp.
$16.50 postpaid

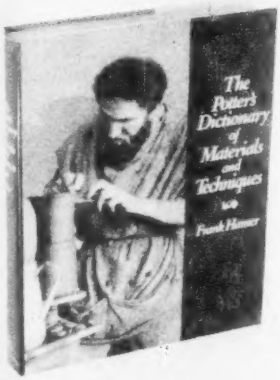
from:
Watson-Guptil
2160 Patterson St.
Cincinnati, OH 45214
or Whole Earth

The Potter's Dictionary

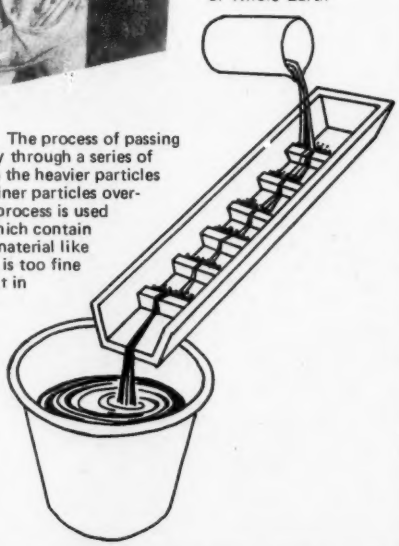
A thick glossy technical manual, full of lucid and comprehensive answers to all manner of questions about potting. It is organized as a dictionary, similar to **Illus. Dictionary of Practical Pottery** *(EPILOG, p. 553) but bigger, better and worth the considerable investment. It has very complete and detailed essays on glazing, clay, and firing chemistry and processes, e.g., "crack" – 8 pages!*

My only criticisms are that it has little to say on design or throwing problems, and, written for a British audience, gives a fair amount of space to British potting terms, pictures and historical descriptions of British wares. For advanced potters concerned with solving many of the complex problems often left untouched and unanswered in the flood of how-to books of recent years.

–Elina Holst Levy



The Potter's Dictionary of Materials and Techniques
Frank Hamer
1975; 349 pp.
$25.00 postpaid
from:
Watson-Guptil
2160 Patterson St.
Cincinnati, OH 45214
or Whole Earth



Levigation. The process of passing a thin slurry through a series of traps where the heavier particles settle and finer particles overflow. The process is used for clays which contain unwanted material like sand which is too fine to be caught in a mesh.

Saddlery and Harnessmaking

Professional saddlers and harness makers are often very expensive and tend, in this country at least (Great Britain), to be a tight lipped bunch who don't want to tell you things that they had to serve a five year apprenticeship to learn.

This book is unique (I think) and tells it all. It's a straight reprint of the edition written in 1904, when these trades were as commonplace as motor mechanics is now, by one Paul Hasluck, who was then Master of the Worshipfull Company of Saddlers. This is the complete (300 tightly printed pages with 300 drawings) text book of the trade. It covers all the common repairs as well as manufacture. All hand work, no machines.

If you want to make an English side saddle or a complete set of plough gear or waggon harness, or just repair a broken trace or whip or reline a collar, this book tells you exactly how, which knife and leather to use – precise shapes and sizes to cut – where and how to sew and with what thread, etc. etc.

–anonymous
Argyll, Scotland

Saddlery and Harness-Making
(With numerous engravings and diagrams)
Paul N. Hasluck
1971, 1975; 156 pp.
£2.50 (**$4.50** postpaid)
from:
J.A. Allen & Co. Ltd.
1, Lower Grosvenor Place
Buckingham Palace Road
London SW1W OEL England

Holding and gripping tools include the clamp, known also as the pair of clams. Held between the knees in a slightly slanting position, the clamp keeps the work firmly in position while the stitching is being done; it lies against the left knee, and by throwing the right leg over it the work is held fast between the gripping points. Note that the saddler has the clamp between his legs in a slanting direction, and not as the shoemaker, who has them straight up, almost against his nose, when bending over the work. One reason for this is that the work done by the saddler with the clamp requires more force to press the awl through than the work done by the shoemaker; consequently the saddler must set his clamp against some firm object (his left knee) so that it will not yield under the pressure.

Coin mutilation

friends –

If you have ever worn or attached to your keyring a U.S. coin with a hole drilled in it, chances are you've been hasseled by some well-meaning patriot who will inform you of your "crime" ("It's a felony to deface federal government currency you know, punishable by fine, imprisonment, exile and/or death!") Fear not friends - after having numerous run-ins and bets with parents, students and fellow instructors over the legality of my "make a ring out of a quarter" and other coin mutilation projects, I called upon the aid of the Secret Service whose response is here reprinted . . . now, who wants to bet!?!

joe eddy brown
Glen Ellyn, Illinois

Dear Mr. Brown:

Reference is made to your letter dated October 9, 1975, relative to the legality of manufacturing home made jewelry from U.S. coins.

In that connection, Section 331 of Title 18, United States Code, prohibits the fraudulent mutilation of coins of the United States. It is the opinion of this Office, in which the Office of the General Counsel concurs, that the mutilation of coins for your proposed purpose would not be prohibited provided there is no fraudulent intent and the coins are not used fraudulently.

We appreciate your concern for the laws in this matter.

Sincerely yours,
David H. Martin, Legal Counsel
Department of the Treasury
United States Secret Service

Choosing a spinning wheel

A wheel, as any other fine tool, is a very personal thing. Which one to buy depends on a number of things: the kind of spinning you want to do, the variety of fibres you want to spin, quantity of output, size, portability, esthetics, etc.

Here are a few tips on wheels in general:

1. A double drive band wheel is good for learning because the ratio of flyer to bobbin revolution is fixed. By turning a single screw you adjust tension (speed of takeup) by adjusting the distance of the bobbin and flyer assembly from the wheel — a whole lot easier when hands and feet are trying to co-ordinate their action!

2. A single drive band wheel with a brake on bobbin or flyer (often called "scotch tension") allows fine adjustment of the ratio of bobbin to flyer revolution. You can "slow" the bobbin or flyer revolution for nearly zero for spinning very short staple fibres like cotton, that require lots of twist. Or you can "speed" it up to nearly equal the other for a very fast takeup with little twist for spinning flax. So, you have to adjust two things, the distance of your whole bobbin-flyer assembly from the wheel and the amount of braking action you want. More versatile system but more complex to learn.

3. With the double drive band you adjust yourself to the wheel and fibre; with the scotch tension you adjust the wheel. So it's up to you — feelings run high in both camps.

About size and portability, the castles are smaller, have the bobbin and flyer assembly mounted above the wheel, and ride well seat-belted in the car. The saxonys are larger, less portable, but faster. The tradeoff is in diameter and weight of the wheel — the large wheels produce more bobbin and flyer RPMs per treadling effort, hence more speed. Without some initial skill they can also be more difficult for a beginner to control.

Here are the wheels and their strong points; they're each quite different in feel and function:

THE CLEMES (double drive band) is an excellent castle wheel for beginners. It's compact, beautifully finished, good for fine to medium weight yarns, small apartments and portability.

THE PARAGON (double drive band) is a small saxony, not quite so portable nor polished in finish, but has very smooth treadling and bobbin action.

THE NAGY (single drive band) (EPILOG, p. 569) is the most versatile of the castles, taller, smoother action, more beautifully finished than the others. Magnificent wheel, though recent reports say its quality has slipped a little with increased production schedule.

THE AMOS (single drive band) is the largest, fastest, most efficient saxony. Its beauty is in its function and price, not its finish. For experienced spinners!

THE INDIAN VALLEY SPINNER (single drive band) is good for thick yarns but its action is a bit rough for long periods of spinning.

THE ASHFORD (single drive band) (CATALOG, p. 166) is still the best buy for the money. A saxony, plain as the kitchen sink and a very versatile wheel.

—Diana Sloat

INDIAN VALLEY SPINNER

Handsomest and best of the "bulk" spinners — great for plying "rope" and spinning heavy yarns. Walnut frame handrubbed with cast-iron wheel heavy enough to draw on any weight yarn that'll go through orifice and hooks. Single drive band with scotch tension. Bobbin holds 2 lbs. wool yarn in the grease.

Spinner head can be bought separately for mounting on a treadle sewing machine base — cheaper, but somewhat awkward since the orifice is mounted at right angles to the treadle.

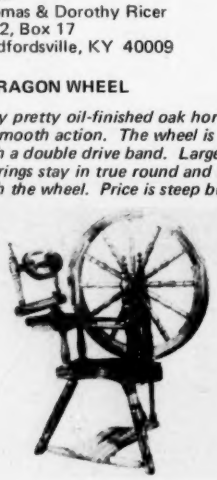
—Diana Sloat

Indian Valley Spinner
$150.00 shipped freight
collect by Greyhound
(Spinner head - $52 postpaid)
from:
Thomas & Dorothy Ricer
Rt. 2, Box 17
Bradfordsville, KY 40009

PARAGON WHEEL

Very pretty oil-finished oak horizontal wheel, that's a paragon of smooth action. The wheel is 20" on a ball-bearing axle with a double drive band. Large capacity bobbins with nylon bearings stay in true round and ride quietly; 2 extras supplied with the wheel. Price is steep but a good wheel.

—Diana Sloat



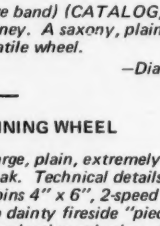
Paragon Wheel
$275.00 FOB
including crate fee
from:
Craig Rehbin
3912 Madera Ave.
Santa Rosa, CA 94501

AMOS HEAVY DUTY SPINNING WHEEL

Alden Amos makes a very large, plain, extremely fast Canadian saxony wheel of oak. Technical details: wheel 27" x 2", orifice 1/2", bobbins 4" x 6", 2-speed whorl, single drive band. This is no dainty fireside "piece," it's a powerful workhorse for production spinning. Unique, versatile, and downright exciting to spin on!

—Diana Sloat

Amos Canadian Saxony Wheel
$200.00 FOB
includes crate fee
from:
Alden Amos
P.O. Box 2904
Oakland, CA 94618



(Additional useful info: He makes a plain, speedy 18" castle wheel, and repairs wheels as well.)

CLEMES CASTLE SPINNING WHEEL

Handsomely turned and finished maple double-drive band wheel. Its action is excellent; the 16" wheel is heavy enough to balance the large orifice (3/8"), hooks and capacious bobbins. Comes with 2 extra bobbins and a built-in lazy Kate for storing yarn and plying from the bobbins. Easy to learn on and an excellent buy! (Distaff available for flax spinning, also.)

—Diana Sloat

Clemes Castle Wheel
$182.50 including crate fee
from:
Clemes & Clemes
Spinning Wheels
650 San Pablo Ave.
Pinole, CA 94564

American Spinning Wheels

If you've inherited Great-Aunt Martha's spinning wheel, here's where to find out about it. These people love wheels, and it shows.

—Diana Sloat

American Spinning Wheels
(A Pictorial Guide)
David Pennington and
Michael Taylor
1975; 100 pp.
$4.50 postpaid
from:
The Shaker Press
Sabbathday Lake, ME 04274
or Whole Earth

Spinning Wheel Plans

All the considerations of buying a wheel, plus a lot of skill and access to a very complete woodshop equal challenge!

Here are three good sets of plans. They've been checked out by a professional wheel maker for workability of design, completeness of detail, etc., and will result in good-sized, functional wheels.

—Diana Sloat

English Saxony Wheel Plan No. 23

Working drawings only. No materials list, no instructions. Handsome wheel. Wheel itself could be a little heavier for strength and stability. Small orifice, bobbin and hooks.

$1.40 (75 English pence)
from:
Council for Small Industries in Rural Areas
35 Camp Rd.
Wimbledon Common
London SW19, England

Colonial Spinning Wheel Plan No. 379

Pretty saxony, full-scale plans, several photos, fairly detailed instructions and diagrams, materials and parts list. Small orifice, bobbin and hooks.

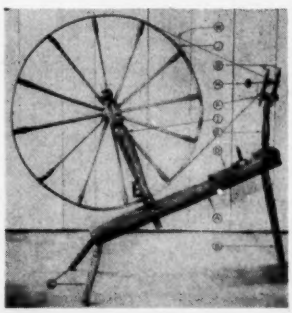
Pennsylvania-Dutch Wool Wheel Plan No. 404

Full scale plans for a walking wheel with spindle head. Photo shows head mounted incorrectly, but fairly detailed instructions and diagrams are correct. Materials and parts list included. Easiest to build.

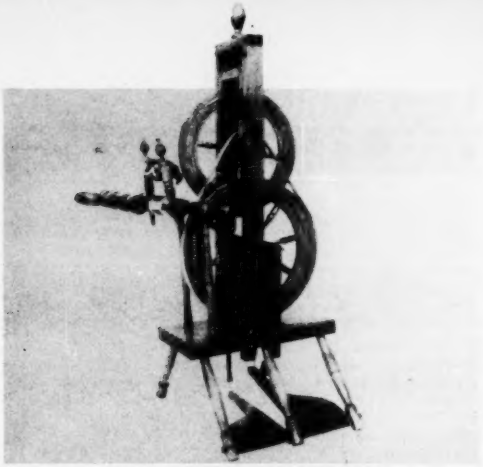
$2.20 each postpaid
from:
Craftplans
Rogers, MN 55374

or
Wildflower Fibres
211 H. W. Davis St.
Portland, OR 97209

Colonial spinning wheel from plans.



Pennsylvania Dutch spinning wheel from plans.



This truly magnificent flax wheel has excellent tension devices. The distaff assembly is missing but would have been of the traditional sort. A hole for it is found near the bobbin and flyer tension device to the left of the maidens. The front maiden is cocked to the left to allow for better alignment of the bobbin and flyer. This arrangement is often found on well made wheels. This wheel has the number 383 stamped on its base. We hope that more of these wheels have survived as they would be a joy to any spinner or collector. This one was found in Pennsylvania.

Making a Simple Violin and Viola

Another first-rate book by the author of **Musical Instruments Made To Be Played** *(CATALOG, p. 371). Ronald Roberts takes a thorough and practical approach to instrument making. The designs, explanations and illustrations are clearly presented so that anyone with minimal workshop skills can produce a respectable instrument.*

There's no pleasure quite like that of finishing an instrument and playing it for the first time. My first such experience was with a dulcimer I made under the guidance of Lyn Elder, another excellent teacher and craftsman. I've made two other instruments using Roberts' plans and methods, and the results have been delightful.

The uncomplicated violin and viola designs in this new book will probably horrify purists of the Amati-Guarneri-Stradivari school. But Roberts isn't talking to them. His designs and steps are directed toward the average person who may never dream of making one of those super-difficult traditional instruments, but who'd be very happy to make and play a thoroughly serviceable violin or viola.

—Scott Beach

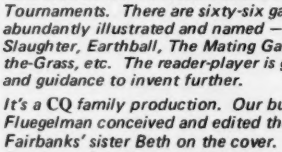
Making A Simple Violin and Viola
Ronald Roberts
1976; 112pp.
$9.95 postpaid
from:
David and Charles
North Pomfret, VT 05053
or Whole Earth

The New Games Book

A compendium of demonstrably playable "new games" — easy-to-join imaginative rough-house mixing games which have evolved from a recent series of New Games Tournaments. There are sixty-six games described and abundantly illustrated and named — Hunker Hawser, Slaughter, Earthball, The Mating Game, Prui, Snake-in-the-Grass, etc. The reader-player is given encouragement and guidance to invent further.

It's a CQ *family production. Our business-advisor Andrew Fluegelman conceived and edited the book. That's Diana Fairbanks' sister Beth on the cover. We've run various fractions of the book in this magazine. I wrote a chapter on "Theory of Game Change." If you want objective judgement look elsewhere. We like it.*

—SB



The New Games Book
New Games Foundation
Andrew Fluegelman, ed.
1976; 191 pp.
$4.95 postpaid
from:
Doubleday and Co., Inc.
501 Franklin Avenue
Garden City, NY 11530
or Whole Earth

SCHMERLTZ

To make your Schmerltz, get a long, cotton "tube sock" without a heel (hiking supply stores carry them) and a solid, sponge rubber softball (about a dollar at variety stores.) Drop the ball into the toe of the sock, tie a knot just above the ball, and *voila*! You've got yourself a genuine Schmerltz.

Now take it to your local park and start tossing. The official Schmerltz toss is made by holding the end of the sock, twirling the Schmerltz around underhand a few times, and letting it sail when you've reached critical velocity. With a bit of practice, you'll be able to send it flying to your partner, streaming like a comet.

The only acceptable way to catch a Schmerltz is to grab it out of the air, one-handed, by the tail only. You'll probably have to work on perfecting your catch, but once you get it down, you'll marvel at being able to snag what seems to be nothing more than the shadow of the leading ball.

There are probably some great games you could invent for your Schmerltz, but, like Frisbee, we've yet to get tired of simply playing catch with it.

Earthball

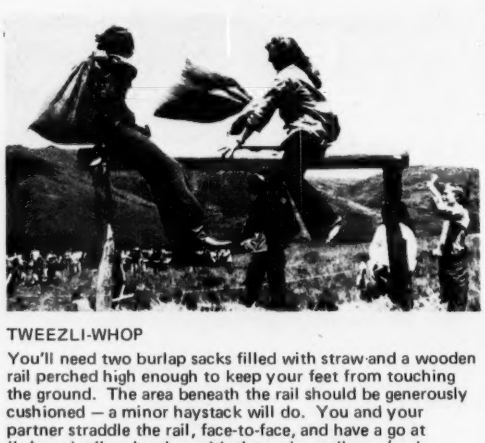
•

Keep an eye out for spectators. Most people who stand around watching a game really want to be playing with you. Invite them.

•

You can start with an idea from an old game and follow it wherever it takes you. That's how most of the games in this book evolved. If you're going to invent a new game, try changing or devising one rule at a time. Play the game that way for a bit, then look for the least exciting part of that game and make a rule to correct that. Keep going, and soon you'll have a completely new game.

•



TWEEZLI-WHOP

You'll need two burlap sacks filled with straw and a wooden rail perched high enough to keep your feet from touching the ground. The area beneath the rail should be generously cushioned — a minor haystack will do. You and your partner straddle the rail, face-to-face, and have a go at "whopping" each other with the sacks until one (and frequently both) fall off.

New Games Newsletter

A several-page occasional from the New Games Foundation, usually with a couple of new new games. The Foundation also sells an equipment catalog, Earthballs, Fraha sets, referee T-shirts, and has two films to rent.

—SB

New Games Newsletter
$2 /four issues
from:
New Games Foundation
Box 7901
San Francisco, CA 94120

Seriatim

A promising-looking quarterly of Ecotopian journalism (inspired by the novel **Ecotopia**, *by Ernest Callenbach, who also is involved in* **Seriatim**). *The first issue has Frank Herbert (of* **Dune**), *Joel Schatz, reports on ecotopian logging, recycling, recent environmental conferences, and so forth. I hope this fledgling lives. Feeding it will help.*

–SB

Seriatim
(Journal of Ecotopia)
$9 /year (quarterly)
$2.50 single issue
from:
Seriatim
Box 117
McMinnville, OR 97128

AGRITECTURE/
BIOSTRUCTURES

Agritectural structures might be created out of green plants. Living enclosures could be shaped by nets, careful pruning, judicious use of nutrients, etc. With greater understanding of plant growth processes it may be possible to develop varieties of plants that will develop naturally into functional enclosures.

Biostructural designs may emerge in the next 20 years as the strongest single force in the architect's repertory. Inspired by the biological processes of growth, reproduction and cyclical change, builders and designers may emulate natural life forms in construction of buildings and villages.

99 Ways to a Simple Lifestyle

Comprehensive introduction to environmentally righteous living. The book is dry and without art, which is too bad because the simple life it advocates is entirely art. Would be interesting to use this manual like a behavioral **I Ching**. *Whenever you need to do something right for a change, pick a number between 1 and 99 and do it.*

–SB

99 Ways to a Simple Lifestyle
David E. Taylor, Ed.
1976; 316 pp.
$5.50 postpaid

from:
Center for Science in the Public Interest
1757 S. Street, Northwest
Washington, DC 20009

No. 10 DEHUMIDIFY IN SUMMER

Summer discomfort is largely caused by high humidity. The air's excess water content prevents sweat from evaporating and thus diminishes the body's natural cooling effect.

Removing excess water from the air in homes is possible without resorting to the expense of air conditioning. Dehumidifying uses a mechanism that draws room air over a cooling coil where it loses moisture. It is then heated slightly and returned by fan.

When buying a unit, look for the water removal capacity rating of the Association of Home Appliances Manufacturers. Dehumidifers can range in price from $90 (with a water removal capacity of eleven pints a day) to $150 (with a 30 pint capacity and convenience features). The electrical operating cost can range from 20¢ to 50¢ per day. Operating costs are reduced when an area has been sufficiently dried and the machine does not have to run steadily.

Water is removed by condensation on cold coils.

Home For Sale By Owner

You have a home to sell, and you don't like realtors and their habits, and you don't know zip about selling a home. What do you do? A real good start is to read this book. Might be a good idea to read it if you're thinking of buying too, for it is a very good presentation of both ends of the deal. It's also somewhat of an indictment of the realty trade (which could use a bit of public scrutiny these days in my opinion). The tricks, pitfalls, forms, procedures, and trade secrets all are shown and in a relatively readable manner, fortunately. Reading it left me with a sense of outrage though. Too bad a book like this is necessary.

–J. Baldwin

Home For Sale By Owner
Gerald M. Steiner
1976; 200 pp.
$6.95 postpaid
from:
Ana-Doug Publishing
4303 N. Bernard
Chicago, IL 60618
or Whole Earth

Recognize buying signals. When a buyer asks whether or not personal property is being included in the sale of the home, assume he's about to buy. If he asks, "Do the drapes stay?" answer, "Do you want the home if the drapes are included?"

If he asks, "Are the washer and dryer included?" answer, "Do you want the home if we throw in the washer and dryer?"

If he answers "yes" to your question, he has just bought the house.

•

Ask closing questions. The definition of a closing question is: Any question the answer to which confirms the fact that he has bought. Examples of closing questions are:

"Would you like to move in on the 1st or 15th of May?"

"Would you like to include the refrigerator in your offer?"

"Should I write a contingency in the contract that it is valid only if your lawyer approves its legal content?"

Important: After you have asked a closing question, SHUT UP!! The next person who talks loses!

Cross-Generation Marriage

BY THEODORA KROEBER-QUINN

Theodora, known for years as the wife of eminent anthropologist Alfred Kroeber (23 years her senior), began her own writing career in her fifties. Her books include **Ishi in Two Worlds**; **The Inland Whale – Nine Stories Retold from California Indian Legends**; *and* **Alfred Kroeber – A Personal Configuration.**

In 1969, at the age of 73, she married John Quinn, then 29. They had met through John's arranging of TV promotional appearances for her **Almost Ancestors**, *published by The Sierra Club. John now is resident art therapist at Orinda Rehabilitation and Convalescent Hospital and staff art psycho-therapist at Walnut Creek Psychiatric Hospital (where one of the patients recently asked him, "Which came first, the chicken or the egg?" and hastened to answer when John hesitated, "Dinosaurs were laying eggs long before there were chickens.")*

This article was rejected some while back by **Ms.** *magazine. So was the article by Theodora's daugher Ursula Le Guin on the wisdom following menopause which appeared in the Summer 1976* **CQ**. *Is* **Ms.** *ageist?*

–SB

Someone slips on a banana peel. Never anyone one knows. One is free to laugh, to enjoy the absurd spectacle.

Just so one reads in the morning paper of the marriage of a couple a generation or two apart in age. One is free to cluck, to tut-tut, to enjoy the imagined absurd spectacle, this being the sort of thing which simply does not happen between people whom one knows.

Or does it?

It may happen, soon or late, that one or both parties to such a marriage are amongst one's friends or acquaintances. The reactions, then, are strong, immediate, stereotyped, and show wide cleavage as between women and men.

I have experienced as well as observed these reactions over almost the whole of my adult life from the eye of the hurricane: beginning with an early widowhood, followed by more than thirty years as a "young" wife, then nine years as one of the host of grey widow

Brand

Theodora Kroeber-Quinn, 79, and her husband John Quinn, 35, at the house in Berkeley where Theodora has lived since 1926.

"ladies," and now I am in my seventh year of marriage as an "old" wife.

I am seventy-nine years old, the mother of four children, grandmother of twelve. My husband is forty-three years younger than I. We are white; by Berkeley definition "Hill Libbers;" on the Warner scale upper-middle class; our milieu Academia and the arts. My husband is a painter. I am a writer.

I here report reactions to stable, creative marriages in which there is a generation cross-over, as observed in

1931. Theodora Kroeber, 34, and Alfred Kroeber, 55, had been married five years. The cabin was Kroeber's on the northern California coast, neighboring Yurok Indians. Theodora writes in **Alfred Kroeber – A Personal Configuration**, *"My Yurok name was Sigonoy-O-Pere, Old Woman of Sigonoy, a clever triple-meaning name, which placed me geographically, indicated my status as principal-woman-in-my-husband's-house, and kidded my then relatively young age."*

the today-culture of the United States. My view is anthropological, and, as such, discovers our culture to be age-grade-conscious and segregation-by-generation-oriented and to recognize as its ideal image, Youth.

When the age difference between a man and wife is thirty years or more, it is usually the husband who is old, the wife young. I started to write "twenty," forgetting for the moment how relatively unremarked today is a gap of twenty years, a cautionary reminder against the too-facile use of labels such as "natural," and "instinctual;" and a warning, that however laggingly, some liberation from generation tabu is taking place.

OTHER WOMEN & THE YOUNG WIFE

How, then, do older women react to a young wife, newly introduced into the friendship and acquaintanceship circles of her husband? (It is the young wife who enters much more frequently and fully the older husband's circles than he hers, except for her family and most intimate friends.)

The husband who has shown independence in his choice of a wife may be expected to stand out from his peers in other ways, in accomplishment, imagination, intelligence, dynamism, charisma – one or more or all. The young wife slips into a place readymade, and it may well occur to any sensible woman that this automatic placing is a bit unfair, hard to take, all too easy in comparison with her own giving-of-self-contribution to her husband's career. The readymade place may mean, in the diplomatic service or other government service, in the professions, in ladder-conscious Academia, that the young wife is accorded, willy-nilly, social precedence and consideration over her elders. (Time and its passage being as they are, the "young" wife remains young relative to the older women long after she is, in fact, no longer young.) The husband's circles must, then, settle for his wife, like her or not, if they are to keep him, and it may be expected they will try to keep him.

The wives ask: Will this woman trade on her youth? Shall she and we find enough in common to make do? Is she, after all, up to her husband? The attitude is on the whole negative, wary, watchful, these attributes tending to increase and predominate in proportion to the "success" or actual distinction of the husband.

The wives have reason to be on their guard, nor can they look to their husbands for support. (See below.)

How positive the negative may become; how soon and how thoroughly watchfulness gives way to trust and affection, depends upon the young wife herself, rather more than upon the older women however whole hearted their goodwill. It depends upon how far the young wife has already grown beyond the emotionality, vanity, shyness and gaucheries of adolescence and post-adolescence; how intelligent she is; how ample her capacity for compassionate and full maturity; how sensitive her imagination; how genuine her amiability.

Observation reveals the auguries, on the whole, to be good.

OTHER MEN & THE YOUNG WIFE

The men's reaction to the young wife is quite different: Positive. Unreserved.

They find it delightful to discover in their intimate group a young face, to hear the laugh, the fresh timbre of a young voice.

They respond with a gallantry beyond their wont, make a larger effort to be amusing, to please. Their interest and animation quicken.

An aura of happy sex surrounds the couple.

Drawing of Theodora by John Quinn, 1971.

By George, if the Old Man – why he is older than I! – can do it, why not I?

The shaky maleness gets a shot in the ego, without having to put too fine a point upon a more-than-beginning-paunch, an unadmitted lowered sex-drive, or the spectre of male "change of life."

The fantasies set in motion rarely hover long over the particular young wife who has given them wing; the women's reserve is rarely embittered with jealousy, real or imagined. The men's reactions are in part natural and defensible, in part jejune; and easy, all too easy to caricature. In fact there is nothing funny about their behavior, and much that is tragic. For American men are the victims, more woundingly than American women, of the national obsessive youth-worship syndrome: idealization of youth for youth's sake, whatever its other qualities or worth, and leading to that saddest of spectacles, the imitation of youthfulness when the reality can no longer be held on leash.

OTHER MEN & THE OLD WIFE

How do the men react to a reverse marriage in which the wife is old? Promptly. Negatively. Denunciatorily. Moralistically.

Either the woman is an old fool who is being taken by a young scoundrel, or both man and wife are, quite simply, beyond the pale.

Surely the old woman does not expect her friends to accept this indecently young man?

The indecently young man surely does not mean to introduce his wife into his circle?

How in God's name is a man supposed to act toward this woman, older than himself? He'd feel a bally fool flirting with her. Playfulness won't do.

And what stance toward the young man? Fatherly? Patronisingly at ease? Jolly?

It is my conviction these men are reacting to panic – sheer middle-years, American-made, male panic. The aura of happy sex surrounding the improbably pair reminds the older men that this young husband may be presumed to be out-performing his elders – the youth bogey raising its sexy head. And men are justified in feeling that both nurture and nature have let them down rather badly. They have been reared within a culture which makes no positively oriented and sanctioned provision for pre-marital sex experience and which does not offer its young, or its old, socially accepted patterns or procedures for extra-marital sex. The double standard for sex, now in process of dissolution, still leaves both men and women without the sex proscriptions and prescriptions to be found in most other cultures of today and in the so-called "simple" or "primitive" cultures of yesterday.

Nature, too, has let men down, putting male potency, its degree and its durability, physically beyond individual control. And when impotency is upon a man, there is no youth-disguise he may wear for lover, mistress or wife.

OTHER WOMEN & THE OLD WIFE

Meanwhile, Why, the man asks himself, are the women so damned unconcerned? To all appearances, so acquiescent, ruminative? So intrigued? So preoccupied in quietly, cooly, openly sizing up the young husband?

It can't be they are fantasizing Young Lovers of their own?

Well, of course it can. They do.

And if the husbands suspect they detect an ironic gleam, a touch of naughtiness and triumph in their wives' eyes, their suspicion is probably correct. The wives may well be recollecting fickle Nature's generosity in placing no biological or age limitation on a woman's participation in the sex act to full orgasm.

The women say "Bully for you!" to both the young husband and to the old wife, especially to the wife. And mean it, for the most part. Given a reasonable sense of security on the part of the other and younger women, the marriage calls forth a spontaneous generousness, not always to be found between women; an amused by gentle gaiety; and something almost protective toward both wife and husband. Beyond the imponderables of temperament and congeniality and the nuances of like-dislike, love-hate, the reality of the positive reaction depends

upon the younger wife's own security, upon "where she is," by her own standards and those of her society.

The unmarried woman, younger than the young husband, or close to his age, confronts in his marriage a bursting of the youth balloon – her secure toy. All manner of new values, new life-patterns, tumble from the burst balloon. Picking up the pieces, if she is as bright as a woman ought to be, a wry smile accompanies her words, "And I thought I was liberated." It will occur to her that perhaps, just perhaps, American men, some of them, are taking stock of women, lovers, mistresses, wives, in other countries? In other cultures?

To the woman who is a widow, particularly if she is old, the marriage is an ego shot: If she can do it, why not I? And indeed why not?

(The detailing of the whys and why nots and of the whole of this area, widowhood, largely neglected by both women's and men's liberation, I shall hope to explore. It is a wasteland needing opening up. But – another day, another thrust.)

THE WIFE & THE MAN

So – the women say "Bully for you!" And the men come 'round given time and pertinent guide-lines from their wives. The fact of the marriage and the parties to it are accepted and naturalized to the circle. There is exotic appeal in that the marriage "works;" that it has an amiability, a distinctiveness, a distinction all its own, and there is the difference of menage. The wife has an old and comfortable familiarity with the "life-style" of the majority in the circle. Both the women and the men find something to envy, something to look forward to, "When the children are grown up," in her present so differently-oriented household.

In both women and men, but sooner and more deeply (perhaps) in the women, there has been a pondering and some subtlety of comprehension of the strains, the restraints, the reluctances, the shocks and hurts this old woman has herself endured and foisted, all unwilling, on her family and her closest friends before taking a lover; before the serious, thoughtful decision to go on to marriage; of the questions the young man must have asked himself, and found hard answers to, before making his decision and commitment to this marriage.

The shell is cracked: let us to the kernel, bitter-sweet, strong.

Crossing generations in marriage is a Way of Life too aberrant, too special except for some few, particularly when it is the man who is young, the woman old.

The man need rather to have raced down his Time-track with greater awareness, speed and intensity than is customary: to have lived through and beyond the romantic love-fantasy of youthful illusion, beyond first and later loves; to have been through and out of an earlier marriage. He must long since have realized that he does not desire nor intend to have children of his own seed. He must have learned many hard realities.

Theodora by Constance Raffetto. The hat used to be Eve Arden's, a friend of the sculptor.

I can scarcely say what the old woman is about when the young man comes abreast of her, loitering down her long Track. But the tracks will merge only with an instant chemistry and recognition, beneath all differences, of mutualness of Values, Direction, Taste, Pattern, Style.

In the merging will be no place for pretense, for effort to appear younger and less wise than one is, or older and more wise. No place for jealousy of youngness, of old experience. Each must be himself as he is or strives to be within himself, not as family, friends or society image him or would have him be.

For those to whom come such a love and such a marriage, the horizon of communication takes on a palette of sunrise shades, and sunset; an enlarging; closed shutters opening to let new winds blow through, bringing sounds and smells from new worlds for them to savour. And always, the intimate continuing discovery of the unknown potential behind the unlined, unlived face of youth; behind the lined, lived face of age. ■

The only daily NEWSpaper

Perhaps because it's harnessed to real events (namely price changes, the relatively uncontrollable democracy of the market), **The Wall Street Journal** *has an honesty. Having an honesty it has an originality (maybe those qualities are not separable). I know that if I were restricted to two periodicals for all my news, I would take* Science *and* **The Wall Street Journal**.

For example, suppose you were looking for something worthwhile to do. In the past few months the **Journal** *would have told you about:*

1) A MATCHMAKER - a former security guard at a singles apartment complex in Marina del Rey, California who found he had a knack for introducing people who could be serious about each other. He started a business, Couple-Up. "Mr. Brady eschews psychological questionnaires, computer-matching techniques and video-taped interviews. He relies solely on intuition, common sense and his personal knowledge of hundreds of people in the marina. . . . Both men and women agree to pay a flat fee of $20 to cover telephone for Mr. Brady and two or three part-time "scouts" who tip him to potential clients.

"For the $20, Couple-Up promises to arrange a new introduction every three to five weeks, if necessary. Nothing more is paid until clients decide they can't live without each other. The male client then has to pay 2.5% of his previous year's gross income, up to a maximum fee of $5,000, to Couple-Up; the female client pays a fee ranging up to $500. . . .' I think I could make $50,000 a year if I did this full time,' Mr. Brady says. [9 June 1976]

2) TRAVELING FARMERS' MARKET — Moving from neighborhood to neighborhood in Honolulu, Hawaii, these city-regulated markets sell at one-third below store prices. "The basic idea is simple: The city invites farmers and other vendors to sell their fruit, vegetables and certain other foods — frozen meats, packaged products such as sausage, fish, and seafood — directly to the consumer, bypassing the wholesaler or retail store. It supervises the vendors, provides the open-air marketplace in the 21 poverty neighborhoods usually at a parking lot by a city park or recreation center.

"But most important, the city ensures that prices are kept low. Vendors are required to sell below the price at which wholesalers sell to retailers, as established by the State Department of Agriculture. The markets are without frills, and the shoppers even bring their own paper bags. . . .

"Farmers are happy because they now have an outlet even for produce that wholesalers won't buy, either because it isn't Grade-A in appearance, is seasonally in surplus or is an ethnic specialty vegetable or fruit that can't be readily sold in supermarkets. In many cases, farmers say they earn more in the open markets than they could selling to wholesalers." [26 July 1976]

3) INVENTIONS ON TV — The most popular television program in Australia is a weekly program called "The Inventors." "The format is simple. Four amateur inventors appear, demonstrate their inventions and are judged by a panel. The complications arise the following morning as company after company tries to reach the previous evening's inventor. . . . About 60% of the inventions that have appeared since the show began seven years ago have reached the market." [24 Aug. 1976]

—SB

The Wall Street Journal
$45 /year

from: The Wall Street Journal
200 Burnett Road
Chicopee, MA 01021

How to Run a Small Business

One of the classics in small business management. The advice in this exceptionally clearly written book would apply to the small craftsman attempting to make a living from his skills, or to a commune, as well as the usual Gift Shoppe enterprises. We know of so many nice people who have been had by not knowing this kind of information. It is an excellent place to learn a game in which disaster lurks everywhere.

—J. Baldwin

How to Run a Small Business
J. K. Lasser Tax Institute
1950, 1974; 306pp.
$9.95 postpaid
from:
McGraw-Hill Book Co.
Princeton Road
Hightstown, NJ 08520
or Whole Earth

Acid-test ratio is similar to the current ratio but shows cash capacity more sensitively. It expresses the relation between the quick assets (cash, collectible receivables, and readily salable securities) and the current liabilities. The ratio is derived by dividing the quick assets by the current liabilities; for example:

$$\frac{\text{Quick assets}}{\text{Current liabilities}} = \frac{\$7,350}{\$6,000} = 1.2 \text{ acid-test ratio}$$

Inventories, prepaid expenses, and longer-term investments are excluded from current assets in computing the acid-test ratio. When this ratio is 1, a business is considered in a satisfactory liquid condition. That means that cash plus marketable securities and current receivables are equal to the current liabilities.

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One of your first steps in inaugurating a business is determining your "break-even point." This is the number of units of your product which must be sold for income to equal all expenses incurred in producing the merchandise. Logic would dictate that if you are in a high rent area and need to sell half your stock of art objects each month in order to break even, you have started a losing business. Assuming your product or service is a worthwhile one, the control of your overhead is the key to your profit.

Morning Thunder Tea

All you coffee-addicts: listen and listen good. Celestial Seasonings makes a caffeine product that outclasses coffee on every level (except that it doesn't taste like coffee, it tastes like good tea). Morning Thunder Tea is made from a blend of Chinese black tea and Brazilian mate. It's got 54% more caffeine than coffee. It's a real godsend if you're like me and enjoy tearing through a day.

It doesn't trash your stomach; it has a lot less tannic acid than most tea. And it comes on in the most delightful way: gradually and unobtrusively. No wheel-spinning. Plus it's a great appetite depressant. The packaging is appealing graphically, and is covered with little aphorisms like Thoreau's "Beware of all enterprises that require new clothes."

—Jeanne Campbell

$ .90 bulk, 4 oz.
$1.80 bags, 2.03 oz.

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and most food stores

Kesey in 1976 at a wrestling match.

earthshoes & other remarks

BY KEN KESEY

EUGENE, OREGON

There's a phrase in Egypt for something that is sold in the marketplace. Here's a pot that's made out of brass and here's another made out of brass. They're the same pot. This one is old and beat up; this one's brand new. The old one sells for more money. It's said that it has *baracca*; it means that it's been blessed; just the amount of hands that's touched it, the amount of eyes that have looked at it, have blessed it in some way and made it magic. You can tell what's good by how worn it is. That isn't the way our aesthetics are headed.

This collection of mouthfuls is from two talks given by Ken Kesey, author of **Sometimes a Great Notion***;* **One Flew Over the Cuckoo's Nest***; and model for the hero of Tom Wolfe's novel,* **The Electric Kool-Aid Acid Test***.*

The Eugene, Oregon, address was made this spring to The Friends of the Library. The New York one (sent to us by Anne Waldman) was over a year ago at the Poetry Project at St. Mark's Church-in-the-Bowery, which continues to provide an open forum for artists. I printed one anecdote in two versions to give the flavor of each audience and the immersion of Kesey in their contexts.

Kesey is no convert to conservatism. Right through the height and/or depths of psychedelia he was the voice of responsibility and honoring (sometimes by sacrilege) the appropriate gods. You can see the result in his solidly reared children. (Always check the children of intellectuals you think may be right about something.)

Despite its name the actual destination of the great bus "Furthur" was usually to visit the parents of one Prankster or another.

–SB

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As everyone knows, people aren't reading as well as they did when we were younger, for a number of reasons. There is a "Sesame Street" – "Welcome Back, Kotter" consciousness that has crept in not only to our homes but into our schools and into our libraries. And gradually as these trendy things that I call "earthshoes" work their way in, something good drops off at the end, until finally what you're left with is a lot of fashion and nothing that's eternal. This is the point of a library, whether it's my little bookbag here, or the big library in Eugene, or the University of Oregon library which I'm familiar with and use frequently. It is where you house the eternal that you've gathered.

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I have here a bunch of books that I picked up both from around my place and from the high school. Here's **Grapes of Wrath** by John Steinbeck. It's been around a lot; it's a sturdy book. It was put out – let's see when it was put out – '39. That book will stand up another forty years. It could have another thousand eyes pass over it. The book wouldn't be harmed and every eye would be benefitted. This is one of my books.

These are some of the books I picked up from the high school reading room. I picked them up according to how they were worn. This is how you know what's being read. This is **Nigger**, by Dick Gregory, which cries out to be read like a lot of the trendy ethnic or feminist or earthshoe literature does, to the detriment of really good, say, female writers or black writers – good writers like H.D., Hilda Doolittle. About one feminist in a hundred knows who she is, and she's one of the best poets in America. Or Grace Paley, who may be the best short story writer since Eudora

Welty. Unknown. Unknown people because there's so much attention being put into this earthshoe consciousness: find out what's going on this year, be on top of it, so that you don't miss anything.

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I Will Fight No More Forever – I haven't read it, I have no idea whether it's a good book or a bad book, but I know the consciousness that puts it on the library shelves. It comes from a certain pressure; it is not coming out of literature. It is coming from somebody saying, "Read some Indian stuff, read some women's stuff, read some black stuff." Just so that you'll have it down so you can look at all these guys and say, "Yeah, yeah, yeah, I've read all about wurchajig."

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I looked through all of these books the high school kids are reading. They're not getting Faulkner; they're not getting Hemingway; they're not getting Melville; they're getting me. I'm not a classic; I'm not a wart on a classic's butt yet. I'm working at it, I may make it as a classic, but I know that I'm not in there with **Moby Dick** yet. You don't need to teach **Cuckoo's Nest**; there's nothing to be said about it. It teaches itself. It's a simple Christ allegory taking place in a nut house. Everybody can read it and plug in at their own level. The reason that it's taught is so that they can catch these kids' attention.

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When I go to a drugstore and I find Jack Nicholson on the cover of **Cuckoo's Nest**, I believe my "Yoknapatawpha County" is being subdivided by the land sharks and eventually they're going to be selling MacMurphy-burgers down here on the corner. And that not only hurts me who was the creator of the work, but it hurts the person who is reading the work, because it's already polluted and becoming more and more polluted until – it's like the voices that are on the Saturday morning cartoons. People down there can't think of any new voices or new characters. All the voices are Ed Wynn, old voices, because they don't have the brains to think of anything new.

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Always I'm reminded of French Peak up here. French Peak, for those who haven't kept track of it in the last ten years, is a place that they have been wanting to log so bad for so long that they don't really even want to log it any more, they want to fight about it. There are no roads through it, no wires through it – it exists at an elevation, about an hour from Eugene here, that no other wilderness area exists at. At one argument we were having about the French Peak area, a logger stood up and said, "All these long hairs, these ecologists, and stuff like that, they never go up there. They're just talking about it like it's an abstract idea. We're loggers and we know the place. We want to get into it." (That's because it was a virgin, I think is what it was.) He says, "You're probably not even going to go up there this year." And I said, "That's probably right. I'm probably not going to go to the Library of Congress, either, but I don't want it logged."

I want it there forever; just like I want the Great Pyramid there forever so that I can go and look at it. "My God, look at that. There's that pyramid. I've seen it all my life on a pack of Camels; it's there; it exists on the face of this earth; it belongs to me." It doesn't need to be obstructed on the skyline by this Japanese corporation that is moving in and building some kind of hotel the same shape as the pyramid right next to it. That's pollution.

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I wish there were some good Buddhists in the country that would teach the Bible, instead of all these Christians. I mean, they're driving people away from the Bible by the droves. The Bible is, apart from anything God might've had to do with it, one hell of a book. People have forgotten this. It needs in some way to be taught. People are not going to learn it.

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I went through a lengthy period of my life which I am going to go into now because it makes for a nice metaphor. Suddenly there were a bunch of us high and we realized that we had a chance to see the real books, the Karmic books. They weren't at the principal's office or down at the City Hall. These were the books that showed just where you stood in eternity, that showed how you were doing; if you were a gentle soul; if you were a harsh soul; if you were afraid; if you were courageous – it was right there. And we thought, "Hey, that's far out. Let's leave these other books alone and go to the real books."

So a lot of people did, for quite a long time, taking lots of stuff, breaking words apart, breaking sentences apart, breaking books apart. We even – about 12 years ago, Kenneth Anger and Anton LaVey, the Crowleyite crew from San Francisco, were coming out to visit us at our house in La Honda. To make a point, I took all the books out of the house. All

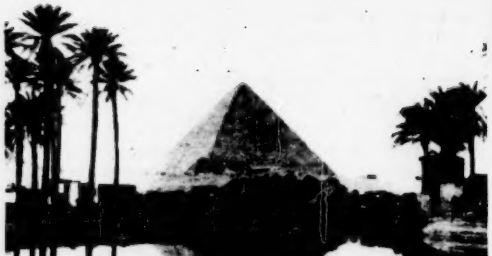
my good books I put over here and all the books I didn't want any part of I put over there and we were going to burn them, to make some kind of point. I have no idea what the point was, except that it was part of a chopping off of that old way. The guy whose job it was – his name was The Hermit – whose job it was to wheelbarrow the books up and put them in a great pile had got to the wrong pile of books, so he got all of my good books. I went up to the fire and there were all of my good books, but there was this audience already there and I was obligated to go ahead with the ritual, which included – this was on Mother's Day – which included a hen that had been hoisted aloft in a golden cage in the branches of a redwood tree and a stump that had been sprayed gold and an axe in the stump, all of it sprayed gold.

We let the hen down and there was an egg in the cage, I recall. The Hermit said, "Stomp that egg!" and I stomped egg. We chopped the head off the chicken, we plucked the chicken, we cleaned the chicken, burned the books, boiled the chicken. The chicken just was the awfulest thing you've ever tasted in your life – tasted just like burning books. My library, at that point, was no longer in existence. I thought, "Well, I've already burned all my good books; I might as well burn all my bad books." I wheeled them up there and then burned them. I have kicked myself around the block for this a dozen times.

It wasn't too many years after that in my quest to look at the real books, that it was as though a big hand grabbed me by the back of the neck and says, "YOU WANT TO SEE THE REAL BOOKS, HUH?" and forced me, nose to the page, to look for about thirty hours at the inequities of mankind, at every ungentle act and lie and coercion that I had ever done. Finally after seeing all the things that were wrong with myself, going on through the Vietnamese war and finally right out to everybody starving everywhere, I realized that is the real books. And it's what hell is, for hour after hour after hour to see where you really are and what the situation of the world really is. It scared the pants off of me.

This happened in about 1968 or '69. I'd been in England briefly before this and was impressed with the way the children spoke, in England. They spoke a whole lot better than us Oregonians, let me tell you. In England I began to get a sense of something that I had lost. I didn't know that it was lost; all I knew was there was an emptiness, and it had been for some years.

Here's the way I feel that these drugs affected us. They cut off our periphery time sense, so here we just were, floating. Our minds were scattered. We weren't worrying about where we were going or where we had been. After a length of time of this, we wanted to go somewhere. We saw that there is a light ahead; there are things to be done, in each community and in each heart. So we started trying to make it toward this light, but we couldn't steer the boat. We had turned loose the tiller; the boat was awash in the sea. When you're lost in superstition and dope, you're lost. A lot of people were.



The Great Pyramid: unbuyable, unsellable, everyone's.

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I believe we're competing with "Sesame Street" and "Welcome Back Kotter" on a whole lot bigger level than anybody understands. I believe you've got to reach out there and get these kids right by their noses. This isn't supposed to be a psychodrama that I'm sending my kids to. I'll do that at home; I'll take care of their psyches at home; I will be their counsellor and guru at home. I send these kids to school because I want them to sit down, shut up, open up their book, and learn how to read.

Here's the way to do it. Right now I could take a bunch of these kids that I know in Pleasant Hill because I work with them – they're the wrestlers, they're the football players. I know these guys. They're smart. They're being dumb because it's hip. If I had **Moby Dick** to work with in a class of 25 or 30 kids that I was bigger than, I could say, "Okay, we're starting on **Moby Dick**. Open it to page 1. You! Stand up and read." He has to stand up and read: "Call me Ishmael." He reads until somebody over there giggles at a mistake in a word. "Okay. You! Stand up and read." And you don't let them away; you don't let that mind loose until the end of that hour. That's the way that "Sesame Street" is playing it and if we're going to fight, that's the way we're going to have to fight them. We're going to have to reach back in there and grapple for the minds of our children. And it's going to take people that love books and love literature enough to join in this fight because the teachers can't handle it themselves. We've let it slip too long.

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My short story teacher at the University of Oregon was a guy named J. B. Hall. He was a controversial character there because he wore white shoes. At that time, wearing white shoes meant that you were either a faggot or a commie, or maybe both. Anyway, he at one time pointed out to me a part in a short story

called "Soldier's Home" by Hemingway in which this guy Krebs has come home from the war and he's sitting there in the morning wondering what to do with the day – whether to go watch his sister play indoor baseball or just exactly what. His mother wants him to go get a job, but he doesn't want to move. As he's sitting there, he watches the bacon fat harden on his plate. And J. B. Hall says, "See, that's what it is. There's where it happens; right there." And I saw it. I saw, "Right! That's what it's about! That's what literature is about!" And a door opened up to me and it's never been closed. I thank this man from the bottom of my heart. It's a turn-on like – it has nothing to do with intelligence. It has to do with somebody grabbing somebody and saying, "I know something that's good. I'll give it to you for nothing. You'll have it all your life."

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The challenge of literature today for the writer is not to write about the dogshit on the streets in New York, but write about how somebody rises above the dogshit on the streets of New York. It has become so popular to write about the anti-hero living in the dogshit, in fact glorifying in the dogshit. There are a couple of girls at Pleasant Hill that are freshmen; I've known them for a long time. They're headed for doom. They have gone out two or three times – bought a couple of bottles of Mad Dog 20-20, fallen down, broken their teeth, broken their glasses. They've had two or three motorcycle wrecks. They have run away from home. Everybody knows the syndrome. What's wrong with them? They don't have any sense of the eternal. Where are they going to get it? They're not going to church. There's no church for them. Even if they go, their ears can't hear it. They can't find their place any more. And yet they're screaming with their mouths bleeding and laying in the dust of the motorcycle. They're screaming for some direction.

We've had warriors fighting in this arena for a long long time. They have left us a lot of records of how to fight. Martin Buber's **I and Thou** is as strong a book as I know to teach somebody about how to live in this world and relate to the world and relate to God at the same time, so that you don't become one-sided like George Wallace who chops off part of himself and becomes strong but one side of himself is gone.

Patty Hearst is the metaphor for these girls. She's like a blackboard; anything can write on her. What is going to write on her if we don't? If somebody doesn't step in and take up the chalk and write words of Shakespeare or Yeats on this blackboard, what is going to be written on it is going to be pornography, is going to be shallow stuff, pap at its worst level because it caters to these particular lost girls and it leads them further and further into lostness instead of leading them toward any light.

Everybody in this room has pretty much the same idea that I have about what the light is. One time somebody was saying, "But you're so much more enlightened than I am." Paul Foster was sitting near-by and says, "The light is seven million miles away and we're all clustered up back here at 5 inches, 5-1/2 inches, 6 inches, 6-1/2 inches." Maybe somebody's a half an inch ahead of somebody, but that's about all. When it comes to really going toward the light, the people in this room are about as enlightened as it gets. I know Baba Ram Dass, I know Tim Leary, I know all the honchos of enlightenment. There isn't a one of them that knows anything that everybody in this room doesn't know. It's time we fought for it. It's time we fought when we say, "**Moby Dick** is better than **The Carpetbaggers**. Okay? **Moby Dick** is better than **The Carpetbaggers**. The Taj Mahal is better than the Holiday Inn. The Eugene Armory is better than the Federal Building."

NEW YORK

Here's a favorite tale of mine from five years ago that, had it a name, might be called "Karma."

It's Christmas eve, see. We've kept the television off for two weeks. We've got this lady from England named Shirley that's helping us do a traditional Christmas, and it's mellow and warm. Then we hear the dogs barking. I go outside and there's a couple standing in the sleet – one a guy you can tell has been in jail because all his features still have that smudgy look like jail tattoos get when they're done with two pens a match stick and india ink – the other a girl looks like if she hasn't been doing speed she should have been doing speed.

They're both dark but they're carrying a blond baby, about 18 months old, being boldly carried like a lot of children at that time, like a revolutionary poster held up in front of them showing where they stood on things like the nuclear family and soap & water and so forth. I thought, it's Christmas and miserable and no matter how sullen the guy's eyes, or glittering the girl's, I got to invite them in.

At first there was a lot of talk about how wonderful things were getting everywhere as consciousness kept expanding. Then talk about how wonderful it all was, mixed in the same breath with what assholes they had encountered on their journey, how the beautiful far-out people from the holy magical commune they had just left had freaked out and sent them packing for no reason at all, which was for the best anyway because the place was a madhouse and filthy as a pigsty.

The baby had a terrible cough – *rrrhack rrrhack rrrhack* – my wife says, "Would you like me to get something for your baby's cough?" The woman says, "No, it's a natural childbirth baby. A triple earth-sign, right? Would you fuck with the healthy balance of a triple earth-sign? I believe doctors are just as unnatural as husbands. The wild animals get by without that kinda crap."

"I believe, I believe," – in her jagged-edge speed voice as bad as any TV hardsell for Tiger Tanks or Hot Wheels. The Dickensonian mellowness was fading fast. I got up and began to walk around

Ted Streshinsky

1966, San Francisco, the Acid Test Graduation brewing. Foreground, The Hermit ("Stomp that egg!").

rubbing my head and knotting my brow and thinking "O Lordy Lordy!" because at this point I knew that these people came either as an answer to a question or as the question that I must have the answer to.

Finally the woman got around to changing the baby's diaper which was mustarded full of a day's diarrhea. My wife says, "Would you like me to get some Kaopectate?" And the woman says, "WHAT THE HELL'S THE MATTER WITH YOU I TOLD YOU IT'S A NATURAL CHILDBIRTH BABY WHAT ARE YOU TRYING TO DO POISON MY BABY?" The guy hisses, "Shut up you dumb bitch before you get us kicked out!" "YOU SHUT UP, ASSHOLE!" "Bitch!"

And all of a sudden I had to say something that I don't ordinarily say to people unless the condition is desperate or dangerous. But I felt that karma was picking up momentum so fast that my whole living room was in danger of being sucked down with it so I said, "Look, if you don't stop doing what you're doing here and now, tomorrow and the next place is going to be worse than this, and next week worse than this week, and next year worse than this year, and your next life – if you get another life – worse than this life, until, finally, unless you change your mind, you will just . . . go . . . out."

We, too, have to change our mind and pull out of our karmic nose-dive or we are a nation of doomed souls.

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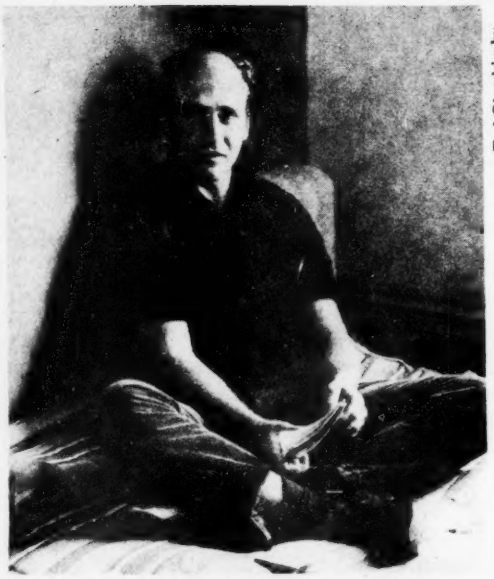
Here's another sermon I've used, called Venusians.

Outside of Eugene, Oregon, about an hour's drive up into the low logged-over mountains, is the largest piece of untouched wilderness acreage at that elevation in the United States (most wilderness area is really high, above the tree line), untouched by roads or wires. Not so much timberland but the logging industry wanted to get into it tremendously. At first we assumed their lust was for lucre, as usual, then we found that the trees were so big that they were going to have to re-rig the equipment in the sawmills to accommodate trees that size. The deeper we got into it the more we realized that these guys couldn't be wanting to do this for money because it was going to cost more to change the machinery than what they could log.

I thought, it's sexual. Because it's a virgin forest and loggers are loggers there and they're going to *get into that forest even if it costs them more than they make.* But the more I worked out with them at public hearings and debates the less I believed this macho motive. Their determination seemed driven, in fact, less by lust than by mechanized mindlessness that is programmed to seek and destroy what is salient and beautiful the way a Holiday Inn will crush a historic home or a rocketting trail bike will home in on the rarest meadow without greed or lust or even the perverse devilish tingle of doing something dumb and evil on fucking purpose and "ya wanta make something of it?" Not greedy, not horny, not even ornery. Just doggedly, blankly, inhumanly determined – as though carrying out post-hypnotic orders planted secretly behind those blank eyes by an alien for unhuman reasons.

Non-human reasons. I began to see them as the victims, not the villains, and when one finally jumped up to screech in overloaded reaction at me, "Listen



Ted Streshinsky

Fall, 1966, underground. Fugitive Kesey plans the Acid Test Graduation.

mosta you hippies and townies and old ladies and such probably never been up to French Peak and probably never will be!" I found myself completely without anger toward the man. As politely as I could I admitted that it was probably true, just as it was probably true that most of us aren't going to go to the Library of Congress either. But we don't want it logged.

In thirty years when they try to say, "You guys have got it better than ever, living in little cement squares. If it wasn't for this modern technology you couldn't survive." Then we'll need natural places. We'll need to go back and check someplace to see . . . no, no, it's not true: it works, it always works.

There was a force trying to cut out something that was necessary to our survival, to the way that we care for each other. And since I couldn't figure this to be human, I had to assume it was Venusians.

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Martin Buber says there's a path of community. It's made up by a nation of people which extends over the whole globe – it knows no boundaries, it knows no idealogies, it knows no policies. It's a nation that has always been in there, in between various conflicting forces, trying to oil the waters as best as possible. It's a nation that knows itself and keeps track of itself, and if you think about it, wherever you've gone you've known this nation and you've always been strengthened by this knowledge.

As exampled when we went to Mexico two or three years ago. Instead of going down to the beach where the Grateful Dead and the cocaine was, my wife insisted we go up into the hills where the Mexicans were. As we walked up the hills – we had to park our car at the bottom – I felt eyes out in the Bougainvillea and saw this 70-some-year-old woman up there washing dishes. She watched me go back and forth, kept track of me, and if I had come home drunk, had lascivious inclinations towards some of those Mexican girls, got out of line in any way – she would have filled my night with strange arrows. She had that whole number of blocks covered. When we left after three weeks she gave me one nod. It was all I was to get, but it was as strong an acknowledgement of human-to-human as you can get.

Ram Dass explained it this way: he said about 400 years ago the Baal Shem-Tov, the founder of modern Jewish Chasidism, came to the king and says, "King, the wheat is all poisoned and everybody that eats it this next year is going to go crazy." King says, "That's terrible." And he says, "I thought you would say that, so I have stashed back here enough wheat for you and I to make it through the year and we won't go crazy." The King says, "Now wait a minute. If I'm the King of these people and you're the rabbi to them, ought we not eat the same food and feel the same things so that we have a better idea how to do it?" The Baal Shem-Tov says, "I thought you would say that, too. So I thought that we'd give each other the chance to put a little X on each other's foreheads so that when we see each other later on in the street, we will know that we chose to go crazy, whereas everybody else is just crazy."

And we did. Fourteen or fifteen years ago we chose to go crazy, man, and we know each other. And the only big mistake we ever made was the mistake of thinking for a while that we were going to win.

•

For a while we began to believe we were going to win. We developed vested interests in the victory to come. We began to parcel off into little groups, it doesn't make any difference which it is. The Krishnas and the Jesus freaks – the literature they're hanging out is all battling each other, and yet all of those guys are the same halfway-through-a-step acid casualty kid that won't go ahead and complete what he started when he lifted his foot up and grabbed the first thing that he came to. One guy grabbed that stick and another guy grabbed this stick, and it set us to fighting each other in all manner and ways.

•

I drove back across the country last year, from Washington, D.C. through West Virginia. Our country is in terrible shape, folks. One block in any direction off that main Washington D.C. street is broken glass in the streets. Let me tell you something. That Bottle Bill that we have in Oregon is a good law. If you want to vote for something political, the Bottle Bill is a good one. It provides you with a chance of civilization. Broken glass is against civilization. As long as bottles are coming in and there's no refund on them, they will be broken. If there's a refund on them they won't be. It's as simple as that, and it doesn't cost anybody anything. It's a good law.

[more →]

Anyway, driving through West Virginia, through this raped country, staying off the freeways where they've landscaped it, through this torn, terrible country, we passed this guy whose face was so much like the country that we didn't really see him out there hitchhiking. We picked him up later on in town when he walked up to the car and says, "Can I get a ride with you guys?" Almost 60, skinny guy who had done jail time or VA time, wearing khakis, wearing a baseball hat, with a six-pak of beer. I got out the side to let him in the car. Our driver took his hat off, and he's got enormous long hair – it fell way down to here. The guy took a look at him and took a look at me and then re-thought his whole situation and started talking, freaked out, and tried to explain his freak-out.

He says: "You guys just don't know. Last year," he says, "a couple young fellers came by here." He says, "I just finished a construction job, I had a lot of money, I had a brand new suitcase," he says, "these couple young fellers, they pick me up," he says, "they took me outside a town here. Man," he says, "they beat the piss out of me." He says, "I almost got away, up the bank, but one of the suckers got me by the ankles," he says, "they drug me back down there and they just beat the piss out of me." He says, "I finally got up to the road and I waved a car down and I got into the hospital." He says, "I've been hurt worse than that a lot, by machines and by cars and horses," he says, "but this was different."

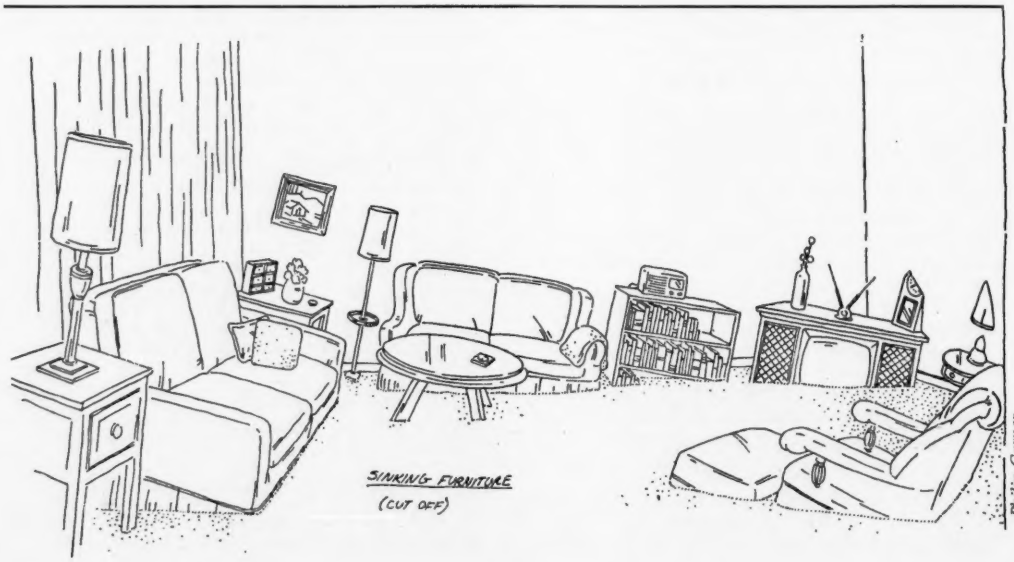
And I began to get a sense of what he was talking about, about what women are talking about, about rape. He says, "This was different." And he says, "The cops finally came in about three days and took me back out there to the place and I got out there." And he says, "I saw the grass where it was all bent

down and my blood was on it and," he says, "God, they just beat the piss out of me."

And it was like the nation spoke up through this guy. He was saying, some things hurt, deep inside of you. The spirit, the spirit, is hurt in this nation. And all the people whose spirit has not been hurt can help these people.

It doesn't make any difference how much electricity is in those lines or how much gas is in the car out there, if you don't have the spirit, you don't do anything, you don't do jack shit, you lay around.

When we begin to think that the spirit comes from something outside of us, we're then conditioned to try to buy it in some way. On the other hand, you can be broke and accomplish a great amount. ■



May 12

BY LOUISE NUSSBAUM

The only stranger who ever raped me was Matthew Allen Charles. I was walking to my car after work one night, alone because the two boys I worked with left by the back door. Two men followed me to my car.

Ah alright siste ah now
you won't make any noise
now will you Thaat's right
Ok now just give your
money yeh ok give it out
Now come on siste
theis can't be all
you'r-e puttin us on Ok
Umwell what'd ya
think Should probly kill her
ye I mean maan
she's seenus Ye she's seen
and could Now you won't
go tellin the po lice
now weel ya.
Ok siste give us the keys
Listen I jus don't believe ye
you see I mean
now you've got those keys
Thaat's right now
give me the keys
Ok man you split and I'll meet ye
All right siste we're goin to
leave now Where's a where's
the key go Listen you put it
in Thaat's right
Lights lights ok Standard
gears First second third
anymore Ok
Fuck what's that asshole
coming back for OK siste lady
turn your head Right yeh we
don't want you to see that license right ok turn again
turn your head Not thaat we don't trust you laady we just
wanna be sure Yeh the
cars hot but we're gona be in it
for a while so you jus turn
your head Ok now I'll be right back
and don't you go looking at that numbe
Ok let's go
all right lady you can drive
git out and walk around
Yeh now go Left here just go
go I'll tell you where te turn
Well now lady you're all
right yeh nice soft blond hair
Sorry about this whole trip
but I mean baby ah I gotta live
Ya see I got this friend in jail
ye on dope weel on everething
Ah mara huana too but the onle
one they'll get to stick is speed
And anyway I mean he can
fight his case bette in the streets
you see what I mean siste ya
so listen I mean man how much
money do you have now Ok so
now I'll give you a two dollars
back so now you have five
Thaat's nothn baby Ok right here
Noow Hey now don't let's get
careless Ok right here now
back up See that tree ova
there Yeh that's the one baby
Park unde it
Now listen baby I mean
look at your parking Straighten
the car out That's right Ok now
we sit and wait.
Nice soft white skin You don't
mind if I touch you now don't
you baby So smooth and up
here yeh I can play with you right
right baby Ooh you've got nice
ones don't you baby
I bet its really nice Yeh
I bet your boyfriend just digs
it He's probly waiting for
you right now Yeh what'll he
just say about this

I was assaulted with a deadly weapon, robbed, kidnapped, forced to commit oral intercourse and raped on May twelfth. Charles could have been given a maximum sentence of 150 years in prison. He got eighteen months so he should be up for parole in a few weeks. I dream about him finding me again.

He pulled off his pants and left them around his feet on the car floor. His penis wasn't hard but was flopped between his thighs. He smelled dirty and sweaty as if he had been coming in his pants for weeks.

I smelled like him for three days. I douched in the morning and at night for two weeks and he still dripped out of me.

I wasn't able to cry until two nights later when a tall boy in a soft jacket held his arms around me.

The police took me into a small square beige room and sat me in a chair with torn red leather padding. All the policemen who had watched me come in stood in the doorway. They looked at my legs and my mouth but never at my eyes and they seemed disappointed when Sergent Kirby told them to leave so I could give my statement. I kept getting out of chronological order so they had to start over four times.

The defense lawyer wheeled away from me, stopped next to Charles and, looking at my mouth, asked what oral copulation meant to me. Then they both looked at me.

I never walk alone in the dark anymore because I think Charles is waiting with his friends to slash open my stomach and face. I haven't slept with anyone for a while. I find I'm still afraid of the smell. ■

The year was 1971. The day following the incident Louise describes here, I picked up a copy of our Stanford University daily and read an account of a rape that had taken place in the student union parking lot. Based solely on the victim's details of the rapist, I knew the girl had to be Louise. I recognized her style of perception.

She was my freshman roommate. She corresponds closely to that vision of white, blonde, aristocratic female. She's a second year law student at an eastern university, and now, as then, she is a writer.

—Jeanne Campbell

A Street Man's Answer to Rape: Humiliate the Raper

BY WILLIE "SMALL BANANA" WILLIAMS

I have read a lot of professor stuff on how to stop rapes the last couple of years. I am not saying I have the answer but since I have some general experience from the streets maybe what I say might be a part answer.

Everyone knows that most rapes are never told to the police. I'd say that on the blocks where I use to live maybe ten girls and women anyone would want to rape would tell the police. And that's out of maybe 150 girls. And, of course, most girls who tell the police are treated like whores even if they are not. But, the worse thing about it from the girls' viewpoint is that almost no one is convicted and most rapers are treated like heroes by the people who count — their friends.

The suggestions I have read in most professor articles are never going to make any changes in rapes or convictions. The reason I say this is because both in my group and even probably among professors, raping a good-looking woman gives you a lot of prestige.

One day while thinking about myself (I am out of work right now) I came up with a big weapon to partly stop rapes, make women feel better about reporting rapes and make sure rapers are convicted. The idea for the weapon comes from my nickname "Small Banana" which is partly why I left Brooklyn. I call the weapon "Humiliation." I never was afraid of prison but I was always afraid of being made fun of, particularly regarding my manhood. And most of my friends felt the same way.

Here is how my weapon works and as you can see it is probably legal.

When a woman is raped, if she uses my weapon, she goes to the police and instead of charging rape she charges *Indecent Exposure.* All she has to say is that a man grabbed her, took out his penis and showed it to her and that's all. She says nothing about rape. The advantages of doing this are:

1. The police have no respect for guys who take our their penis in front of women and will immediately try to find the guy. More important the police will not treat the woman like a whore or ask her any embarrassing questions about who screws her.

2. The woman is not embarrassed before her friends or husband.

3. The raper who is picked up is very humiliated since his friends think he is a sick guy who can't even screw a woman. And, when he goes to jail he will be picked-on by the inmates as a sick guy.

4. The raper will probably plead guilty since any lawyer will tell him that juries don't need much evidence to convict guys of sick sex crimes like Indecent Exposure.

5. Even if the case goes to trial the woman's background will not be examined since it has nothing to do with the crime or any defense to the crime.

6. Although Indecent Exposure is usually only a misdemeanor the raper has to register as a sex offender wherever he goes and in many states like California, a second conviction is a felony.

The only disadvantage to reporting a rape as an Indecent Exposure is that the penalty is much greater if you are convicted of rape. But, since most women don't report rapes, those who do are embarrassed, and few rapers are convicted, the odds are much better on Indecent Exposure. To put it another way, you are a probable winner with Indecent Exposure and a sure loser with rape.

Some people may ask, is this legal? In my opinion it probably is since it's the very thing the District Attorney does all the time when he lets a guy plead guilty to a lesser crime like disturbing the peace instead of assault with a deadly weapon. Since all the legal elements of the crime of Indecent Exposure are part of virtually every rape, the woman doesn't even have to lie. All she does is not report the rest of the crime. The funny part of it is the raper can't afford to say it wasn't Indecent Exposure and was really rape — since if he does he gets convicted of a felony. ■

I wrote this article in my own language by myself but my girlfriend fixed up all the spelling and some of the grammar and put in periods where they belonged. The last name is not mine because if I ever go East or am sent back to prison my friends might get me. My nickname "Small Banana" is real and is very important to understanding what I am saying in this article which is the first thing I ever wrote since I went to Jefferson High School in Brooklyn in 1953. —W.W.

G. Russ Youngreen

Amnesty International

It's always a shock to learn that God is not interested in your pain. The best you can hope for is the help of other people.

The use of torture is steadily increasing world-wide. It is difficult to find out about and nearly impossible to check. So far the only deterrent is public opinion. That requires a respected international investigative organization. Amnesty International delivers.

Torture is a runaway phenomenon – far from preventing fanaticism, it increases fanaticism, which leads to more torture, and so forth. It will not cease until indeed it becomes as universally unthinkable as slavery. If we're going to have an intelligence and espionage establishment, let it work on this one.

You can participate in Amnesty International with donations, letterwriting campaigns, and attention to their various publications: **Matchbox**, *sundry special reports, the* **Annual Report**, *and their book* **Report on Torture**.

–SB

A photo from Uruguay shows hooded man suspended by wrists, la bandera *(the banner).*

Publications from:

Amnesty International
Room 309
2112 Broadway
New York, NY 10023

Amnesty International
West Coast Office
3618 Sacramento Street
San Francisco, CA 94118

Amnesty International
International Secretariat
53 Theobald's Road
London WC1X 8SP
England

Amnesty International
Report on Torture
1973, 1975; 285pp.
$3.45 postpaid
from:
Noonday Press
c/o Farrar, Straus and Giroux
19 Union Square West
New York, NY 10003

or Whole Earth

TORTURED TO DEATH IN URUGUAY: 22 CASES

Nibya Sabalsagaray
June 29, 1974

A 24-year-old teacher, she was arrested in Montevideo on June 29, 1974 and taken to a military unit where she died after being subjected to the "dry submarine," a method of suffocation with a plastic bag over the head. Only ten hours after arrest, relatives were informed that she had "committed suicide." Strong protest from the National Teachers Federation and other organizations yielded no results.

AMNESTY INTERNATIONAL OBJECTIVES

I detest your ideas but I am ready to die for your right to express them.

—Voltaire

Amnesty International was founded in 1961 in the belief that every person has the right to hold and to express his convictions and has an obligation to extend the same freedom to others. It is now a worldwide human rights movement which is independent of any government, political, ideological or religious grouping.

Amnesty International works for the release of men and women imprisoned anywhere for their beliefs, colour, language, ethnic origin or religion, provided they have not used or advocated violence. These are termed "prisoners of conscience."

Amnesty International opposes the use of torture and the death penalty in all cases and without reservation. Since 1973 Amnesty International has been conducting an international Campaign for the Abolition of Torture.

Amnesty International advocates fair and early trials for all political prisoners and works on behalf of persons detained without charge or without trial and those detained after expiry of their sentences.

Amnesty International seeks observance through the world of the United Nations Universal Declaration of Human Rights and of the UN Standard Minimum Rules for the Treatment of Prisoners.

Astrological birth control is scientifically tested, found worthless

Point Foundation (Last Whole Earth Catalog money) gave a grant to William H. Kautz and Robert Kimball in 1974 for research on Astrological Birth Control.

Eastern European researchers had reported the use of lunar birth data to accurately predict a woman's fertility cycle as well as the sex and the health of her child. Kautz and Kimball tested the principles on which the method was based, and found them to be mostly (but not completely) invalid.

To carry out the test, two samples were used. In one sample, questionnaires were sent to 4,000 Northern California women. 800 were returned, and 315 were used as representative of normal, healthy births for which the date of conception could be estimated. A second sample, of 100 women who had had abortions, or had conceived from an isolated instance of intercourse, were also tested. In both samples it was possible to estimate the time of conception within a day or two. For both samples, the synodic position of the moon at the time of conception was compared with its synodic position at the time of birth of the mother. The results were negative. For the entire sample additional data was tested: 1) how long the woman was trying to become pregnant; 2) whether she lived in the city or the country; and 3) how recently she had used chemical contraceptives. Taking these factors into account, the results were still negative.

For the research as a whole, some slight correlations were found, indicating that there is some lunar influence on the human conception process. However, the effect is either very small or, if larger, is complicated by other interacting factors. In either case, Kautz and Kimball are interested in further studies of the lunar effect. For practical birth control, however, they conclude that there is no significantly useful basis for astrological birth control.

In a separate test on the same data the researchers checked to see if astrological data could be used to predict the sex of the child, as the Eastern European workers had claimed. The results were statistically significant ($P = .003$) showing that there is indeed a solar-lunar effect worthy of further study, but too small to be of any conceivable use at the present time (60% accuracy, just a little better than the 50% obtainable by flipping a coin).

The search for astrological indicators of poor infant health is still continuing. Kautz and Kimball have reported no results as yet, but say that their preliminary findings are very encouraging.

Further information on this research program may be obtained by contacting: Bio-Dynamics Research, P.O. Box 2884, Santa Rosa, CA 95405.

—Michael Phillips

Animal Stories

BY J.D. SMITH

MOUSE DISCOUNT

(heard in Burgdorf, Idaho, 1974)

"I was the manager of the Penny's store in Nampa for a few years. One year business got a little slow, so I took a piece of plywood, drilled about fifty inch-and-a-half holes in it, randomly numbered them either ten, twenty, thirty, or forty percent, nailed mason jar rings to the bottoms, and screwed pint jars into them. The idea was that when a person had something figured out that he wanted to buy, he'd bring it to the mouse board, and I'd let out this little mouse and whatever hole the mouse would run down, that is how much discount the person would get. Now the trick is this: a mouse won't go into a hole where no mouse has ever been, so by taking a few mouse turds and dropping them down the ten percent holes, and say one turd down one of the forty percent holes, I could provide a little excitement for the customers, and a little for myself, as long as I only marked up the goods fifteen or twenty percent."

COONDOG MEMORY

(heard in Rutledge, Missouri, about ten years ago)

"Now, this dog is for sale, and she can not only follow a trail twice as old as the average dog can, but she's got a pretty good memory to boot. For instance, last week this old boy who lives down the road from me, and is forever stinkmouthing my hounds, brought some city fellow around to try out ol' Sis here. So I turned her out south of the house and she made two or three big swings back and forth across the edge of the woods, set back her head, bayed a couple of times, cut straight through the woods, come to a little clearing, jumped about three foot straight up in the air, run to the other side, and commenced to letting out a racket like she had something treed. We went over there with our flashlights and shone them up in the tree but couldn't catch no shine off a coon's eyes, and my neighbor sorta indicated that ol' Sis might be a little crazy, cause she stood right to the tree and kept singing up into it. So I pulled off my coat and climbed up into the branches, and, sure enough, there was a coon skeleton wedged in between a couple of branches about twenty foot up. Now as I was saying, she can follow a pretty old trail, but this fellow was still calling her crazy or touched 'cause she had hopped up in the air while she was crossing the clearing, until I reminded him that the Hawkins' had a fence across there about five years back. Now, this dog is for sale."

HOW TO FIX A DOG RACE

My Grandpa Frary took a dogfever pilgrimage from Colorado to Florida to learn how greyhounds are trained to run. He found out that many trainers work the dogs in low pens with live rabbits. Real rabbits rarely run in perfect halfmile ovals like their mechanical cousins at the track do. Real rabbits dart and weave and slow down just a little before they change directions. The dogs sense the move coming and break their own strides to make the turn with the real rabbits. At the track the mechanical rabbit runs on a rheostat setup, so that the person who is controlling the speed of the track bunny can slow it down at just the right time, the lead dogs think the rabbit is going to take a ninety degree turn, break their stride a little, and the hind dogs catch up. This knowledge didn't keep my Grandpa from betting on the dogs.

B. L. Syler

CHARLIE THE GOOSE

(heard in Burgdorf, Idaho, July 1976)

"A year ago last Spring, my oldest daughter's boyfriend gave her a little bitty wild Canadian honker, and she raised it up on mush and milk out on the back porch with our three dogs. That goose got housebroke pretty soon, and would come up to the back door just like the dogs, and he'd peck on it, and we'd let him in, and he'd beg food from the table, and it even got to the point where when my daughter was loading the dogs in the back of the pickup she'd just call "Charlie, Charlie," and that blamed goose would fly right up in the back of the truck and ride there, like a dog.

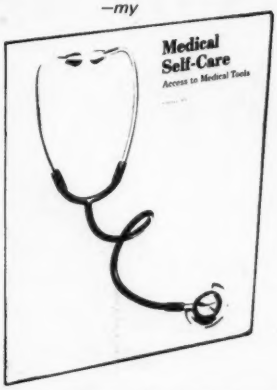
"Well, we worried ol' Charlie through hunting season that Fall, and kept him warm by the fire all Winter, then this Spring he started being gone overnight and the first time we figured out what he was up to was when one of our neighbors called up and said that our goose was down there bothering his dogs, and keeping folks awake all night. We figured he was trying to mate with a dog since he probably had never seen another goose.

"Finally he was gone for a couple of weeks and we started believing he'd flown up to Canada or somewhere, when my daughter was driving about fifteen miles from our place, and saw a wild goose out in back of this old fellow's place, and stopped and it turned out to be Charlie with his wings clipped. She and the old man had quite an argument about whose goose it was, but she eventually proved to him that the goose would follow her anywhere she would go, so she helped him up in the back of the truck and brought him home and put him out on the porch with the dogs, and, you know, believe it or not, we got up the next morning and our own dogs had eaten that goose. Musta had something to do with his wings being clipped." ■

Medical Self-Care

Here's a new young doctor who believes that Medicine has been a closed shop for too long and that we ought to know more about our own bodies than Blue Cross will pay for, that we should be our own paramedics. That puts Ferguson on Our Side.

—my



Medical Self-Care
(Access to Medical Tools)
Tom Ferguson, Ed.
$7.00 /year (quarterly)
from:
Medical Self-Care Magazine
P.O. Box 718
Inverness, CA 94937

Welcome to our first issue. Here's the kind of information we'll try to provide:

1. Reviews of the best popular medical books.
2. Articles teaching basic paramedical clinical skills – how to take a blood pressure, examine a sore throat, listen to a friend's lungs.
3. Sources for hard-to-get medical equipment.
4. Access to the "medical literature" – medical textbooks, journals, bookstores, and libraries.
5. Accounts of the growing health consumer/patient education movement taking place both inside and outside the health profession.

I never planned to edit a magazine. I'm a 4th year medical student planning to become a family practitioner. But during my first year on the hospital wards, I was continually amazed by how little responsibility most patients took for their own health.

About half the patients I saw that year had a preventable illness. Every time I saw a smoker with lung cancer or emphysema, a heavy drinker with liver disease, a fat, sedentary businessman with a heart attack, or a woman who'd only come to the doctor when her breast cancer was long past any chance of cure, I realized that medical care is not something to be left to doctors and other health workers.

•

The White Shop

This is where I buy most of my medical books and equipment. They'll be handling most of the books in this issue.

Ab Freeman welcomes mail orders and gives free advice.

—Tom Ferguson

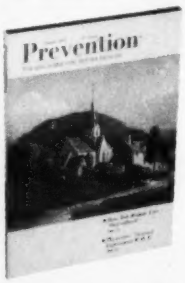
The White Shop
43 College Street
New Haven, CT 06510

Prevention

Long before most of us knew that white sugar wasn't the best kind or that the red dye No. 2 might cause cancer, **Prevention** *Magazine was writing about, researching and sharing ways to stay in good health. They report on new research on vitamins, unusual therapeutic methods, the inside story of some of the horrible things done to food, as well as reports on physicians, spas, or clinics where new methods of healing seem to be working.*

Their bias is to keep you away from M.D.'s who do not understand nutrition and to make you more aware of your own responsibilities for staying alive. They also watchdog legislation and regulations which may affect your health. The writing is not technical and the advice is usable.

—Jim Fadiman



Prevention
(The Magazine For Better Health)
Robert Rodale, Ed.
$6.85 /yr. (12 issues)
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Circulation Department
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Emmaus, PA 18049

Choice: Hot Flashes or Cancer?

The AMA department which deals with drugs has received numerous inquiries from physicians concerned by FDA recognition of the link between estrogen and an increased incidence of uterine cancer. The medical men are wondering if physicians who prescribe the drug can be held liable by patients who develop cancer. The consensus of legal opinions solicited by "Hotline": the practitioner must fully inform patients of the possible dangers. **Prevention** readers will not need the reminder that patients and physicians have an alternative to choosing between disease and discomfort. Vitamin E, as far back as the 1940's, has been found *harmlessly* to relieve the "sweats and flashes" of menopausal symptoms isn't likely to become popular, however, because it's inexpensive, widely available, obtainable without a prescription, and it's a vitamin.

How to Resuscitate a Lizard

1. Scoop lizard from pool.
2. Shake out lizard
3. Massage lizard's torso, applying on and off pressure, directly behind frontal legs
4. Apply mouth to mouth resuscitation to lizard's mouth, breathing slowly and forcefully.

Sent by Sally Brooke

The American Anti-Whaling Movement Is Racist

BY MICHAEL PHILLIPS

I give this speech* with great trepidation since I, myself, played a role in the anti-whaling movement. When I was president of Point Foundation in 1971, we gave money to start the anti-whaling movement; we were certainly the first foundation in the United States to give funds to this movement. We were the first supporters of Project Jonah, and we also funded anti-whaling activities at the Stockholm Environmental Conference in 1971. We supported other environmental groups, as well, but this is the one about which I am most embarrassed. Over the years, as I have worked in it, and watched the growth of the whale-saving movement, I have seen the anti-whaling message being absorbed by the American public, and realize that the message is not being accepted because of its merits, but because it appeals to a basic American prejudice against the Japanese.

It is hard for anyone to prove this kind of racism. If i had said, in 1948, that the reason blacks were not represented on professional baseball, football, and basketball teams (except for the all-black Harlem Globetrotters) was racism, I would not have been taken seriously. Even ten years ago, most sports fans would not have accepted racism as the reason blacks were excluded as quarterbacks and coaches. Today it is obvious that racism was the reason. Racism is ingrained in our thinking in such a way that we can't see it. Another example is how hard it is for feminists to convince men, as a group, that their actions make life more difficult for women. Indeed, I am sure there are people in this audience who do not believe that sexism and racism are built into the structure of our society. However, I will do the best I can to try to prove that the anti-whaling movement, as it has developed over the past five years, is almost entirely based on racist, anti-Japanese feelings. I will do so by demonstrating three things:

1) That the whale species being harvested at the present time are not, in fact, endangered.

2) That the American activist groups ignore our own plunder of endangered species, in order to focus on the Japanese.

3) That the tactics of the anti-whaling movement, particularly the use of a boycott, are proof of racism. I will show that there are other ways that we have used to deal with foreign countries, in similar situations, that have not involved boycotts.

Let me begin with the first point. The whales being harvested now, under the guidelines of the International Whaling Commission, are not endangered. For the last five years, approximately 32,000 whales, of mixed species, have been harvested annually. The only whale species for which we have usable estimates of total population figures, is the sperm whale, the main commercially-harvested species. In the last two years for which there are records, approximately 17 to 19,000 sperms whales have been caught annually. In 1973 the catch was 17,657; in 1974 it was 19,460 – an average of 18,558. Is this too many? To answer that question, I looked at the figures in the Friends of the Earth's Manual for Speakers, No. II. There I found a "conservative" estimate of the total world population of sperm whales of around 285,000, with a "maximum sustainable yield" for the species stated at 17,400 whales per year. This is their figure. That means that the actual harvest during the past few years has been only 6% above what the Friends of the Earth considers to be "maximum sustainable yield," based upon world population figures that they acknowledge are very conservative. The International Whaling Commission, on the other hand, estimates the existence of more than twice as many sperm whales worldwide, on the basis of their own surveys. So, we have a nationwide anti-whaling campaign, in which children in public schools – tens of thousands of them all over the United States – send pleas to the Emperor of Japan, with drawings, begging the Japanese not to kill

*To the Commonwealth Club of California.

*Michael Phillips is a multi-directional gadfly, innovator, author (*The Seven Laws of Money*), former bank vice president, and former president of POINT Foundation. As treasurer of Glide Memorial Church in San Francisco his most recent accomplishment is a daily tourist bus to cultural and ethnic neighborhoods (black, Latino, Chinese, Japanese, gay, etc.) with native guides. Cultural diversity, Mike claims, is doing fine in the cities.*

–SB

Michael Phillips

whales. Based on 6%. There are bumper stickers all over the United States saying, "Stop the Whale Killers – Boycott Japan." Based on 6%.

Please listen to the tone of that bumper sticker – "Stop the Whale Killers – Boycott Japan." That in itself is blatant racism. Some bumper stickers say, "Stop Whaling – Boycott Japanese Products," but many are more open about their feelings, saying, "Stop the Whale Killers," indicting the Japanese people as a whole. This is a massive, nationwide campaign, supported by all conservation groups, from the Friends of the Earth to the Sierra Club to the Audubon Society, and all based on the most conservative estimate that exists of the worldwide sperm whale population, and a harvest only 6% in excess of their conservatively estimated yield.

The sperm whales are not endangered – at least not based on the most reliable figures available. There are at least nine species that are endangered, but they are not now hunted. There were an estimated 3 million large whales a hundred years ago, and now there are less than 1 million. Americans killed many of those whales, just as we killed the buffalo. We did it wastefully, for ambergris and pet food, products that used just a tiny part of these giant animals. The rest of the whale we totally wasted. It is interesting to note that the anti-whaling movement began in 1971, one year after Americans killed their last whales commercially. In fact, the last American-killed whales were butchered here in the San Francisco area in 1970, on the beaches of Suisun Bay.

Now, let's look at point number two – American activist groups ignore American plunder of endangered species while focusing on the Japanese. This statement is based on my experience with a foundation that gave money to a variety of environmental groups to save endangered species. In one instance, we gave money to try to save the Rocky Mountain Bighorn Sheep, whose very survival is questioned by all biologists involved in the field. Although there is almost no opposition to this biological fact, hunters and members of the Fish and Game Commissions who are hunters, continue to permit the killing of these animals. Since it is Americans doing the killing, of course, this movement has received very little publicity, and therefore no widespread support. We Americans continue to hunt Bighorn sheep and hang their stuffed heads over our fireplaces.

Another time we tried to find activist groups to protect the New Orleans pelicans, whose high death rate is caused by pollution. We couldn't. And still no significant effort is being made, by any of the major national conservation groups, to save the pelicans.

Still another case is that of porpoises. The porpoise is a class of dolphins in the same "family" as the large whales. I told you earlier that among large whales, 32,000 are harvested under the International Whaling Commission's quotas – quotas that all the whaling nations have to agree on. But the United States, all by itself, killed 134,000 porpoises last year.* And this year, the Federal courts are permitting Americans to kill 74,000 porpoises. Why? For food? No. It is because the porpoises are in the way when fishing vessels catch Chicken-of-the-Sea tuna in huge nets. The porpoises are being killed for no reason except greed. Just like the buffalo in the days of profitable trade in buffalo hides. This has been going on since the late 1960's, and only last year were efforts begun to help the porpoises.

While we're on the topic of other endangered animals, let's look at our own species, Homo Sapiens. The Concorde and the B-1 bomber are expected to have very significant detrimental effects on our human population. In the future, tremendous increases in the incidence of cancer are projected if 200 of these planes fly regularly. They are flying now, and there has been no effort by conservation groups to boycott France or England, where the Concorde is manufactured, or indeed to bring any economic pressure on the manufacturers of these planes.

My point is that if it is Americans killing Bighorn sheep, New Orleans pelicans, eagles, wild horses, or porpoises, the environmental movement is not too loud, not too effective. When it comes to foreign countries that bring us cancer, particularly England and France, our white, European ancestral nations, there are only friendly relations, gentle coercion. But when Japan is involved, boycott is the immediate solution.

Now, let's look at the boycott tactic specifically. We now have a nationwide, anti-Japanese boycott, supported by every

*According to estimates from the Department of Commerce that were cited in the Wall Street Journal, June 1976.

Portion of a Japanese poster showing the multiple (and total) uses of a sperm whale.

Portion of a Japanese poster showing the multiple (and total) uses of a sperm whale.

major environmental group. Let me suggest that when we have objected to the way a foreign country handled its affairs in the past, we have generally used other tactics to change them. Remember when we objected to Turkey's growing poppies? Because the poppies found their way to the United States in the form of opium and heroin, we paid Turkey $30 million a year, for a number of years, to stop the growing of poppies. No such subsidy has been suggested for the Japanese. Turkey has enormous military value to us, so we had to respect the desires of the Turkish leaders, and the opinions of their farmers. Similar subsidies have been offered to Mexico, Nepal, and Afghanistan, to stop the growing of hasish. No such subsidy has been suggested for the Japanese. Japan has no army or navy, and is of little military value to us. Japan has had no army since we disarmed them in the Second World War.

Perhaps it would be good, at this point, to explain that the main reason that Japan hunts whales is to feed people. The Japanese actually import whale meat from Russia, since they are not able to harvest enough of them to provide sustenance. Japan has a huge population, and very little arable land in proportion to the population. Therefore, the country is dependent on fishing and the import of food for survival. One of the main sources of protein has been soybeans, 40% of which are imported from the United States. Stability of food sources is extremely important to Japan. We have played a major role in creating insecurity and instability in Japan, as in 1973, for example, when President Nixon put a total embargo on soybean exports from the United States, thereby threatening the Japanese source of protein. There were tremendous waves and ripples in Japanese society when that embargo was put into effect, and the people of Japan continue to be insecure about their food supplies. The American anti-whaling movement makes no mention of the fact that Japanese are concerned about the whales and fish as their food supply. No one has yet suggested that we offer Japan a 25-year guaranteed soybean supply in return for their ceasing whaling. It would make sense if we respected them, as people, and listened to their concerns. But we don't. Instead, we use a boycott to enforce our wish.

Lastly, I want to point out the historic impact of another boycott. Some of you may be old enough to know. I was not one of those who understood what led to Pearl Harbor, and the Japanese attack on us. The most important thing that led to the attack was an American demand, in April of 1941, that Japan remove herself entirely from China, where she had been for most of a century, and to enforce our demand we put a total, 100% embargo on all oil to Japan. At the time we provided 80% of Japan's oil. Therefore, we brought that country to an almost dead standstill. Knowing that Japan had only six months potential oil available, we made non-negotiable demands. And we knew they were non-negotiable. Japan had no alternative but to find a new oil supply – in Indonesia – and in order to do that she had to take action against us. Henry Stimson, then our Secretary of War, wrote in his diary, "The question was how we should maneuver Japan into . . . firing the first shot without allowing too much danger to ourselves. . . . We have provoked Japan, I hope she doesn't do too much damage to us."* In other words, we used a boycott of oil to provoke the attack on Pearl Harbor. When the Arabs boycotted us in 1974, it affected 15% of our supply, and you know how we reacted. Well, in 1941 we stopped exporting our oil to Japan, cutting off 80% of her supplies. Now, less than 30 years later, the American anti-whaling movement is boycotting Japan. The historic lessons for the Japanese may be that Americans continue to be as racist as we have been in the past.

*Enclycopedia Britannica, 1975, Vol. 19, p. 989.

Let me add one final footnote about the boycott tactics. Russia is an equally large whaling nation, harvesting almost as many whales as Japan. Since there are few consumer goods of Russian origin to boycott, the U.S. anti-whaling movement has ignored Russia. But one must ask why they have not boycotted the Bolshoi Ballet when it is in the United States. Why have they not boycotted the Hermitage Art Exhibit from Leningrad, traveling throughout the United States? The reason is simple. The anti-whaling movement is concerned with Japan and a hidden racism. It is less concerned with stopping other countries from whaling.

I apologize to all those in this audience for my role in funding, supporting, and helping the anti-whaling movement, and I apologize even more to the Japanese who may at any time read this speech. ■

Greenpeace opposes Japan boycott

The organization which has been doing mid-ocean confrontations with Russian and Japanese whalers has released an excellent position paper on the boycott of Japanese products. Among their points (such as having no wish to help American business by reducing Japanese competition) is this:

The boycott fosters racist attitudes in both the American and Japanese people. On one hand, cartoons of ruthless-looking, buck-toothed, bespectacled, World War II stereotypes of Japanese Imperial Army soldiers, swords in hand, standing atop slaughtered whales and bellowing "Banzai!" have been printed and distributed on a mass basis on the West Coast of the U.S. In California, where 110,000 Americans of Japanese descent were rounded up and incarcerated in "relocation camps" during WWII, the result has been predictable: Japanese-American children have been taunted by classmates and called "Jap whale-killers"; stores and businesses of Japanese-Americans have been picketed simply because the owners' surnames are of Japanese ancestry.

On the other hand, the Japan Whaling Association has not hesitated to stoop to exploiting the racial issue for its own purposes. For example, a Greenpeace representative during a meeting at the Consumers' Center in Yurakucho, Tokyo in 1974 was told by an industry representative:

"You whites killed a large number of whales in the past, but now you can only talk about the responsibility of the Japanese who are actually late-comers to the whaling industry. If you come to Japan and bubble stupid things, Japanese will, because of hatred toward the whites, turn toward militarism."

In the process of saving the whales through non-violent activism, Greenpeace will not be a party to actions which ultimately end up hurting people.

Greenpeace Foundation

860 Second Street
San Francisco
California 94107

2007 West Fourth Ave.
Vancouver
British Columbia, Canada

Project Jonah comment

[It was to Project Jonah that Mike Phillips gave the donation he regrets.]

I haven't got any papers in front of me; I'm writing strictly from the memory of a poisonous paper-bag lunch (provided) at the Commonwealth Club, Pacific Studies Division, where Mike Phillips (who had the good sense not to eat that lunch) and I were invited to debate his premise that the save-the-whale movement in the U.S. was really a hate campaign directed against Japan. Mike suggested to the chairperson, whose name I have forgotten (has he forgotten mine?) that Project Jonah would provide a good foil for his argument. It turned out it wasn't really a debate; nothing was clarified or resolved, so I'd like to have this chance to make a few points.

First, as I told the forgotten man, Project Jonah never joined the boycott of Japanese goods. P.J.'s president, Joan McIntyre, was in continuous contact with the Japanese-American Citizens' League (JACL), in particular Dr. Clifford Uyeda, while our International Childrens' Campaign to Save the Whales was formulated in 1973. The JACL advised Ms. McIntyre that it was in full sympathy with P.J.'s effort and would do whatever it could to make public, in the U.S. and Japan, its concern for the whales. At the same time, both organizations agreed that no purpose would be served by a blanket boycott of goods made in Japan. This for several reasons, namely,

1. That the U.S.S.R. takes as many whales as Japan, and a boycott of Japanese goods alone would obscure that fact;
2. That a wholesale boycott would be so general as to miss the entire point and lose public support because of that;
3. That the public might be led to include all Japanese goods (including those made here by Japanese-Americans) and, further, to confuse Japanese whaling companies with Japanese-Americans;
4. That this holier-than-thou attitude would not do coming from a country that permits needless and useless slaughter of one hundred times as many small whales (dolphins) in the course of tuna fishing operations each year, despite laws prohibiting such taking;
5. Finally, that such a move might be seen as a collaborative attempt with American industry to offset the inroads so many goods manufactured in Japan have made into the American market.

Instead, Project Jonah embarked on a campaign to inform people in Japan of our concern. To that end, a Project Jonah Japan was initiated, staffed by members of a consortium of scientists, journalists and environmentalists in Tokyo. They have published some of our teaching material in Japanese, written articles and held interviews in which they express to the Japanese people their belief about the drastic situation of the remaining populations of large whales. At the same time, we published a diagramatic scheme of the connections between the Japanese whaling

An ad for the Animal Welfare Institute. Peter Warshall observes, "This is the most racist I think exists today in the whale movement. Really, just crude."

companies and other Japanese companies and international American companies. We advise people to avoid these specific companies' products. Furthermore, we have carried out an extensive campaign to publicize what our tuna industry is doing to whales and have called for a boycott of light meat tuna.

That, briefly, is our history. The history of other organizations which have concerned themselves with the plight of the whales is of course various. To tar all of those which have called for a wholesale boycott with the same brush, to call them all "racist," is to dismiss them too easily. Life just isn't that simple. And conservationists aren't usually that unanimous. In fact, various forums have been held since the boycott began (which we have not attended) to reexamine this unusual and united effort.

What is remarkable is that the drastic step was taken, and in concert. Why was it taken? Because the populations of the various species of whales have been continuously decimated for several hundred years, though most intensively in our own industrial century. The humpback, the fin, the blue, the right, the bowhead and the gray whales have been designated "protected" by the whalers' own International Whaling Commission. This year, the quota on sperm whales has finally been drastically reduced, though it is probably still not in line with reality.

It is economically feasible to whale until the very last whale is gone. Still the Japanese whaling companies have cut their capacity in half this year; the Soviet fleet will also be smaller. Japanese whaling public relations men may say that it's because the U.S. puts pressure on them (what's the Soviet excuse?), but the catch-quota figures tell a different story. For many years, as each species has been overhunted, the catch of the international fleet has been below that year's quota. It's not because the whales are getting away from the whalers' sophisticated whale-tracking equipment, it's because the whales aren't there any more. It is a fact that fisheries biologists throughout the world use whales as the prototypical mismanaged marine resource.

It is the same kind of fuzzy thinking that leads Phillips to brand all people who want to save whales "racist" and likewise to so misread what little statistics we have about whale populations so that he sees surplus where the charts show extinction. I wish I could understand his motives for trying to throw this red herring into an already complicated picture.

Eugenia McNaughton

Japanese American comment

RE: PROJECT JONAH.

TO WHOM IT MAY CONCERN:

I have personally known and have admired the works of Joan McIntyre, president of Project Jonah, since 1972.

The Whale Issue Committee of the Japanese American Citizens League was formed in September 1974 with the following goals in mind: (1) To support the concept of whale conservation. (2) To fight the unfortunate racism which has risen from the whale conservation movement. (3) To keep Japanese Americans informed on whales and whale related issues.

Project Jonah has been a responsive organization which has been very sensitive to our particular problems and has actively worked with us to lessen misunderstanding and tensions. We consider Project Jonah to be our cherished friends and colleagues.

I have also known Barbara B. Wesselman since July 1975. Her recent performance at the conference on "Whale Issue: U.S.-Japan Relations" held at University of Southern California (July 14, 15, 16, 1976) was outstanding. She is an eloquent advocate for the merit and the necessity for saving whales.

Clifford I. Uyeda, M.D.
Chairman, Whale Issue Committee
Japanese American Citizens League

Peter Warshall comment

Dear Mike,

It's strange you use sperm whales as your example of how the Japanese are really not over-harvesting. It is the Russians that mainly harvest sperm whales. The 1975 sperm whale quota is: Japane, 5,091; Soviet Union, 11,206. The Japanese are only minimally involved with this species so your argument is fabricated on the wrong whale.

Peter Warshall

The simplest whale solution

Buy the damn fleet.

This is Richard Baker's idea, which arose out of conversation with whale-scientist Roger Payne. Most of the Japanese whaling vessels were bought from the U.S. The whaling continues mainly in an effort to amortize that capital expense. Eventually the owners will probably cease whaling and sell the ships to someone totally unregulatable, such as Chile.

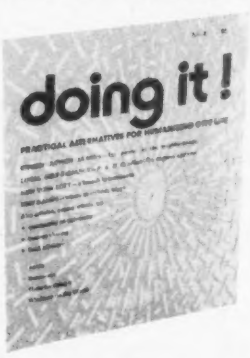
Suppose we buy the fleet now, shortcut the whole process and save ourselves a lot of propaganda as well as whales. How much do the ships cost? What other interesting things might we do with them?

–SB

Doing It!

A magazine with a good explicit subtitle: "practical alternatives for humanizing city life." Idealistic and lively. I hope it develops a wide usership.

–SB



doing it!
Urban Alternatives Group
$10.00 /year (6 issues)
$2.00 single issue
from:
doing it!
P.O. Box 303
Worthington, OH 43085

As Michael Phillips puts it, "The way to discourage urban predators is to make your tools unappealing to them." For example, Mike has a 1970 Suzuki motorcycle with rusty chrome and identifyable personal touches like a leather covered gas tank and a securely fastened flag in the back. It's very well tuned, with new parts throughout, but it looks peculiar. Others in the Briarpatch network do the same with their transportation and other tools. They have had virtually no problems with theft in high-crime areas. In fact, we met a man in San Francisco who made his living making bicycles work well and look ugly.

•

Redlining, by which banks refuse mortgage or home-improvement loans in designated areas, is one of the major causes of urban blight. Without money for residential maintenance and improvements, housing stock deteriorates and the neighborhoods suffer. Bill Batko, who, among other things, is a consultant to Washington's Commission on Residential and Mortgage Finance, believes that grassroots financial institutions can and must be created in order to reverse the exploitation of poor neighborhoods by banks and national chain stores.

Nomadics

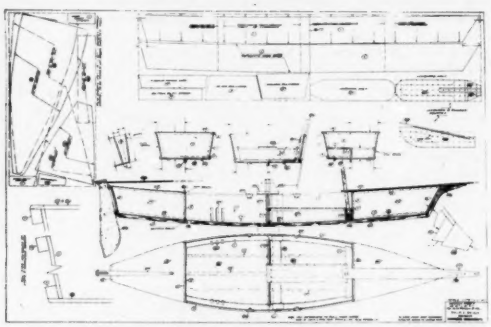
Instant Boats

Winter. Good time to build a first boat in the garage or basement. A first boat had better be simple, if you hope ever to build another. Designer Harold Payson specializes in smart plywood smallcraft requiring no lofting or building jigs. He has nice plans (about $10 each) and patterns for a 15' 6" Crab skiff (pictured), a 12' Kayak, and 8' punt, with more coming.

–SB

"Instant Boat" Series
Catalog
$2.00

from:
Harold H. Payson
Pleasant Beach Rd.
South Thomaston, ME 04858



Materials: 4 sheets ¼" x 4'8" Exterior or Marine Plywood for hull.

Wilderness Survival Cards

Portable, durable, dense information-packing. And good information — details on shelter, water, orienting, edible plants, hunting, tools, first aid, climbing, and signaling. Most nifty-handy outdoor items aren't. This one is.

–SB

Wilderness Survival Cards
$3.00 /5 cards
from:
NOAMTRAC
Box 805
Bloomington, IN 47401

WATER

Survive 10 days on no water at 50°F. Need 3 - 4 pints/day, most can come from food. Look uphill for pollutants. Taste test water, boil to be safe. Animal trails usually intersect at angle toward water, follow downhill. Birds fly to water in early morn & eve, nervousness indicates water nearby. Vines, tree roots, thin branches, hi water content; stand sections on end to drain in a trough. Avoid milky saps. Urine salts, like seawater. Okay distilled, better to freeze - first crystals to form are pure water. Snow/ice - 50% less fuel needed to melt ice. Melt snow in hand or packed in can over fire. Eating raw snow causes dehydration. Ice is best. Ocean ice - year or more old looses salt, is fresh (bluish). Find on hi places where has summer thawed. Icebergs salt free. Ocean beaches - dig hole below hi tide line or behind dunes, use first water seeping in - deeper water is salty. At sea - use solar still. Okay to add little salt water to distilled or rain water to add minerals. Salt water kills 1 - 2 days faster than no water at all. All edible salt and fresh water fish have safe water in meat, chew or wring out in cloth. Rainwater - collect all. Dew - wring out of blankets, etc., laid in open. Mop from grass, rocks, cacti, other surfaces. Swamp/tropics - standing water usually unfit, streams muddy. Dig hole 1 - 6 ft from shore, let filter in, strain, purify. Halazone, chlorine unreliable. Arid lands - avoid water holes where green veg. doesnt thrive (poison). Look for water around veg., especially willows, cottonwood; low places in outside bend of dry creeks (dig hole, wait 2 hrs); base of cliffs, hills, mtns; canyon heads; mineral stained rock; rainwater 'potholes' in rocky places; low places between dunes. Muddy water ok - let silt settle. Cacti - mash core, extract liquid, taste varies. Small barrel (fish-hook) cactus & yucca best. All cacti in world is safe. PURIFY ALL ARID LAND WATER. Alkali, mineral flavors nearly always present - ok in small quantities; leach thru bag of sand; add charcoal, or boil.

Questioning Polarguard & Fiberfill

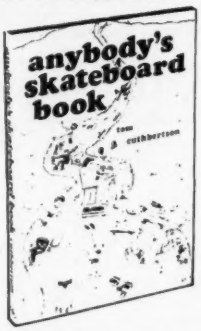
A word of un-praise, or, a counterpoint to a blurb in Nomadics, CQ Summer '76. Polarguard and its competitor Fiberfill II are not the wonder insulators that advertising will have one believe. Some of the more reputable manufacturers are re-thinking their approach to this material. Seems that with repeated stuffing, as per sleeping-bags, both Polarguard and Fiberfill will break down, causing a substantial loss of loft, and hence warmth. There might be a "major change" in the guarantee policies towards coats, bags, etc. filled with these synthetics sometime this fall. Don't know yet. A factory person from the North Face told us here that some synthetic filled items have been coming back as defective returns for this loft loss tendency. They are now saying that the life expectancy of Polarguard might be 3 - 10 years. Not bad, but not good either. I think I can dig out more coherent info and mail it off to you. Beware Snowlion. They have been cruising on their laurels for more than a year, after coming on strong with cheap prices. Prices are now comparable; quality is decidedly inferior. Snowlion is being dumped by a lot of high-falooting retailers and is being picked up by the boutique-rugby jersey-leisure clothing type of sharpies.

Mike Krepner
East Holden, Maine

Anybody's Skateboard Book

Here's a much more detailed book than the one we showed in CQ *Summer '76 (***Skateboarding***, by Jack Grant). This one is particularly good explaining the various hardware, how to choose, use and take care of it. It's by the same author as the excellent* **Anybody's Bike Book** *(CATALOG, p. 253) which remains one of the very best.*

—J. Baldwin



Anybody's Skateboard Book
Tom Cuthbertson
1976; 144 pp.
$3.95 + $ .50 per order handling
from:
Ten Speed Press
Box 4310
Berkeley, CA 94704
or Whole Earth

One type of sealed precision bearing wheel which is not too large or wide for a normal skateboard, and which is made out of really marvelous urethane is the "Road Rider Two." The wheel was thought up by a guy named Tony Roderick, who was lucky enough to have the help of a urethane company in the east that had long and valuable experience in making urethane wheels with good traction. This urethane company could control their urethane formulas so well that they were capable of making wheels for Xerox copiers that could whisk one piece of paper off the top of a stack without whisking off two. Next time you're around a copier, like the Xerox 3100 model, for instance, look into the machine where the pile of blank paper is. Lo and behold, back in there you can see a couple of urethane wheels that look an *awful* lot like skateboard wheels. Heh. Anyway, Tony Roderick and some skateboard makers at N.H.S. Plastics in California worked out a sealed bearing wheel design, and told the great urethane company that they wanted a wheel made of urethane that would grip the road like a racing tire, last forever, and roll as fast as possible. The great urethane company went to work, and came up with something that was, at the time it first came out, *far* ahead of all other urethane wheels.

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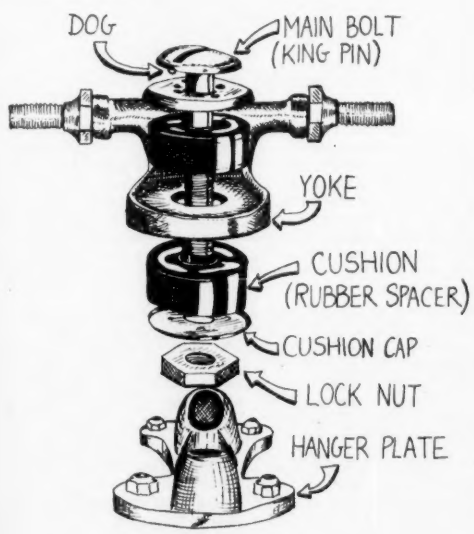
TRUCK ASSEMBLY



The only drawback to the Road Rider wheels is their cost. You can buy two cheap open-bearing wheels for the price of one Road Rider. But the Road Rider is still worth it, because it saves you many spin-outs, skids, wipe-outs, and broken bones. Also, you never have to waste time cleaning the bearings, and if you use them reasonably, the Road Rider wheels will last at least twice as long as most other wheels.

•

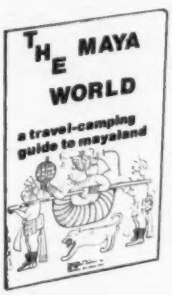
Once you've mastered the slowing-down technique of wedeling, you can mix it in with traverses, some power-slide turns, riding in a crouch, and whatever other moves you want to decorate your downhill dance with. Or you can concentrate on slalom techniques, picking out marks or pieces of dirt or patches on the pavement to use as imaginary gate markers as you go along. The mixture of wide turns and carefully controlled slides is essential in this game; if, for instance, you have to make a wide turn on a steep hill to get around a particular set of marks, and you want to keep your speed in the controllable range as you do the wide turn, you'll have to pull two really fast wedel turns in the middle of the wide turn. Many riders call this a "check turn," because of its similarity to a surfing turn.

On the more level portions of a hill, like those that are about one-in-twenty, you can coast in gentle curves, but you can also do a sort of reverse wedeling, known as pumping. Pumping requires a board with some twang and a rider who can use his body english in perfect rhythm with the board as it turns and flexes. If you weight and unweight the board at just the right moments, and twist in such a way that you "pull" the board through each turn, it will actually accelerate as it goes weaving along. Don't let the wheels slide at all while pumping, or you'll lose speed.

The Maya World

If you're planning on travelling through Southern Mexico and Central America, pack this little book along. Natasha and Gregorio share the insights, out-of-the-way finds and practical tips of seasoned, leisurely, thorough nomads. After being completely frustrated at getting their information published, they've turned self-publishers, with fine results.

—Andrew Fluegelman



The Maya World
(A travel-camping guide)
Gregorio y Natasha
1976; 50 pp.
$1.95 postpaid
from:
Intermundial Research, Inc.
Box 518
Inverness, CA 94937

Belize City has a party atmosphere and to get in the spirit of things we recommend 3 Barrel Rum. Also eat conch fritters at the swinging bridge market and watch the produce being brought in by boat from the many small communities only accessible by water. Belize City is built at 3 feet above sea level so many of the streets are actually canals which lends an old world look to this black city. The English spoken here is musical and rhythmical and will take some getting used to, but it is a pleasant break after many months of Mexican Spanish.

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If you enjoyed visiting Belize as we did, it will interest you to know that part of the development program of Belize is to encourage agriculture with subsidies and low cost land. If you are interested, a visit with the Ministry of Agriculture at Belmopan could be fruitful. Belize is a true emerging country and is looking for people with good ideas who aren't afraid to work hard to realize them.

Communications

The Big Dummy's Guide to C.B. Radio

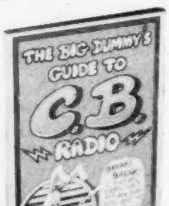
The Citizen's Band radio craze (that's the word) continues to expand at a pace that has even the manufacturers of the equipment surprised. No wonder; CB is real revolution-true people's communication. Surprisingly, the government has not seen fit to overregulate the phenomenon. Instead, more channels are being opened in an effort to accommodate the millions of users and reduce the increasing confusion. Perhaps this effort will be like building more freeways to reduce traffic congestion, which doesn't because it encourages more users. We'll see. Then there are the side effects which are not yet sorted out and may never be. CB assisted crime and CB interference with other communications and electronic devices such as garage door openers and auto fuel injection systems are a few of the problems. But for sure CB is here to stay. And a good way to find out about it is by means of this book. There are others like it but this one seems to be more oriented to non-technical users than most. It covers what you need to know: equipment, regulations, lingo (which is working its way into everyday speech) and how it all works out.

—"Bluejay" Baldwin

The book doesn't say so, but it comes from Steve Gaskin's Farm commune in Tennessee — they needed CB for their bus convoys. Andrew Main, familiar with Farm gossip, says they've sold 250,000 copies (75,000 to the Army). It's the major cash crop of the Farm.

—SB

The Big Dummy's Guide to C.B. Radio
The Book Publishing Co.
1976; 128 pp.
$2.95 postpaid
from:
The Book Publishing Co.
Summertown, TN 38483
or Whole Earth



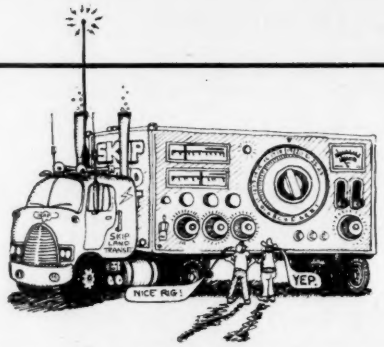
Verbatim

An intriguing little quarterly of correspondence, mini-articles, book reviews, etc. on the world of verbal expression. Hobbyist manic glee is rife throughout.

—SB

Verbatim
Lawrence Urdang, Ed.
$4.00 /year (quarterly)
$1.50 single issue
from:
Verbatim
Essex, CT 06426

We know this is far from true. Step on the toes of a Spaniard, an Italian or a Frenchman, and he'll cry out an anguished "Ay!" Pinch hard a Scandinavian, German or Dutch, and he'll respond with a hoarse "Au!" Poke an inadvertent finger into an Indonesian's eyeball and he'll cry "Adu!" A Japanese will say "Aital," a Greek and Russian "Okh!", a Portuguese "Ui!" . . . In Spain you don't call a friend with a "Hey, John!" You say, "Oye, Juan!" In Italy, it's "Ola, Giovanni!" in Russia, "Ey, Ivan!" In France, "Eh, Jean!" In Holland, "Sech, Jan!" In Greece, "Aye, Ioannis!" In Germany, "Hallo, Hans!" In Argentina, "Che, Juan!" (The latter explains the "Che" in Che Guevara: Argentine-born, Guevara frequently used this expression when addressing his Cuban friends. Hence the nickname.)



Those cottonpickers were saying, "10-4" and "10-20." They are using ten-signals, which are agreed-upon radio shorthand that folks use throughout the country. The calls go from 10-0 to 10-100. Here are some of the more common ten-signals:

10-1	Can't hear	10-13	Weather and road conditions
10-2	Loud and clear	10-20	Location
10-3	Stand by	10-27	Moving to Channel ----
10-4	Yes, Okay, Roger	10-30	Illegal use of radio
10-5	Relay, Repeat Information for another stn	10-33	Emergency traffic on the channel
10-6	Busy at present	10-34	Request for assistance
10-7	Out of service, Off the air	10-36	Correct time
10-8	In service, On the Air	10-46	Assist motorist
10-9	Repeat	10-77	Negative contact
10-10	Stand by	10-100	Rest Stop

Grapevine

A few years ago, in the Dallas/Ft. Worth area, a lot of kids used to call a telephone number that came to be known as "The Grapevine." When you dialed that number you got a busy signal, but between the beeps, you could listen and talk to everybody else who had dialed in. Friends called that number and talked to each other. Strangers became friends after a few encounters on the grapevine. Eventually the number was in use twenty four hours a day. Are you bored? Call the grapevine. Got something to say? Call the grapevine.

Like anything else, you could overdo, and the fun wore off. Sometimes we went several weeks without ever calling in. One day a friend told me that he'd called in and nothing happened. I tried it, and sure enough, the grapevine was dead. We never found out where the grapevine came from, or where it went. After a couple of months, I forgot about it.

Until today. What we had was an open channel (if you don't count the beeps) communications network similar to what the CBers enjoy. Now I understand why CB swept the country. Everybody found out how good it is to have a grapevine. Only CB costs a lot more money. It clutters up the radio bands. Besides, everybody's always talking about important things like where the smokey's hang out. What I'd like to see is a real live, talk to whoever you want to, say whatever you like, telephone system grapevine (no beeps this time please).

How about one phone number per so many thousand that can be used as an open network? The technical problems can't be too bad. The one we had was probably just somebody's goof, but it worked fine. Financing might be a hassle. Ms. Bell is awful tight with her money. How about a foundation? There must be a lot of lonely people who would will their estate to Grapevine in appreciation for hours of companionship in the dead of night.

Are there any grapevines in the phone system now? Does anybody want to make one?

David Clifton
Austin, Texas

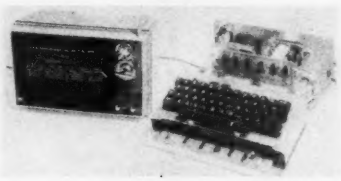
TV Typewriter Cookbook

TV typewriters are the medium of choice for communicating with your personal computer. This book is a comprehensive treatment – the nuts and bolts, in detail. Covers the subject from keyboards to codes, hard copy to color graphics. You can put it on the bookshelf right next to Lancaster's other classic, the TTL Cookbook *(EPILOG p. 704).*

–Marc Le Brun

TV Typewriter Cookbook
Don Lancaster
1976; 256 pp.
$9.95 postpaid

from:
Howard W. Sams & Co., Inc.
The Bobbs-Merrill Co., Inc.
4300 West 62nd St.
Indianapolis, IN 46268
or Whole Earth



A tvt, or *tv typewriter*, is any low-cost way of displaying lots of words, numbers, or graphics on an ordinary tv set. The single most important use for a tvt is that of an input/output device for a microprocessor or microcomputer, but the concept of using a low-cost, mass-produced display to present locally generated and used information is incredibly broad. It is so broad that tvt techniques represent a totally new communications media – a decentralized media that is based on the fast and easy transfer of information rather than the difficult and energy-intensive moving of physical objects, particularly cars and people.

So what can we do with a $30 to $150 machine that puts words and pictures on a tv set? Some of the uses we know of today include:

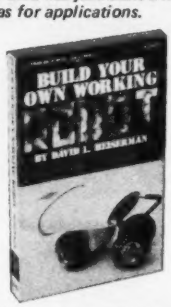
Computer terminals
Video games
Microprocessor "super front panels"
Video titling
Deaf communications
Calculator readouts
Advertising displays
Touch typing learning aids
Teaching machines
Electronic notebooks
Remote message centers
Cable tv response units
Mailing list generators
Word processing: editing systems
Color graphics displays
Political polling
Ham rtty
Phototypesetting
News, weather, and stock displays
Community direct-information access systems

Build Your Own Working Robot

Several decades ago the neurophysiologist W. Grey Walter constructed a number of small robots, called "turtles," which possessed many animal-like behaviors. This book describes how to build a similar device, named "BUSTER," which carries on the tradition using modern digital electronics as opposed to the original vacuum tubes.

It's a do-it-yourself for-the-home-hobbyist style book, but the project involved is considerably more substantial and difficult than most of the genre. The use of discrete logic, rather than a compact micro-computer chip, complicates the construction but also insures that the design is not locked into using some particular manufacturer's product. The mechanical aspects are usually the most troublesome part of such an endeavor, and the shaken down methods given should be enormously helpful to the fledgling roboticist.

The book would be greatly improved by a little sensitive editing and better photographs. Most appropriate for someone who has just built a home computer and is looking for ideas for applications.



–Marc Le Brun
[Suggested by Pecple's Computer Company]

Build Your Own Working Robot
David L. Heiserman
1976; 234 pp.
$5.95 postpaid
from:
TAB Books
Blue Ridge Summit, PA 17214
or Whole Earth

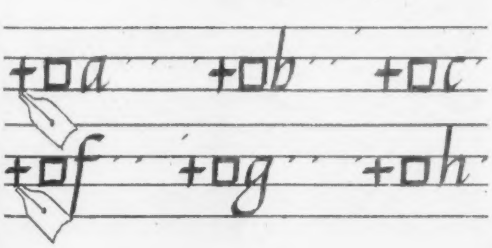
Full-function standby is an interesting mode for Buster whenever he is not in use. He is primed and ready to go at the touch of a switch and, of course, he will squeal for his dinner when the batteries run low.

From all outward appearances, the *full-function standby* mode is the same as the quiescent state. In full-function *standby*, however, Buster's reflexes are still operative. The blunder mode is operative, for instance, letting Buster respond to any object that touches his contact switch assemblies. Our family cat once approached Buster while in full-function standby. The cat's curiosity suddenly changed to terror, however, as he touched one of the contact switches and found himself being chased by a growling red monster. The chase lasted only about five seconds – until the blunder mode timed out – but it was enough to cure the cat of his curiosity about sleeping Busters.

The Italic Way to Beautiful Handwriting

Like a sweet-natured instructor at your shoulder, this workbook gently shows your hand and eye how to go right. He does it, you do it, and he says wise things while you compare. The idiot's guide. People who handwrite their correspondence (esp. to magazines) please note. I should too.

–SB
[Suggested by Phyllis Morrison]



The Italic Way to Beautiful Handwriting
(Cursive & Calligraphic)
Fred Eager
1967, 1974; 111 pp.
$2.95 postpaid
from:
Collier Books
Macmillan Pub. Co., Inc.
Order Dept.
Front & Brown Sts.
Riverside, NJ 08075
or Whole Earth

Keeping your pen slanted at the 45° shown in the drawings, TRACE AND COPY the following lines. Be sure to check your pen angle at the beginning and end of each line by drawing pluses and boxes with equal sides.

Lucy's Blueprints

BY LUCY BURROWS MORLEY
AND CHRISTOPHER THOMPSON

Lucy Burrows Morley, self-portrait
Point Lookout, Lake Huron, 1914

George Eastman House in Rochester, New York, home of Kodak and capital of the world of photography, recently had an exhibition of photographs by an unusual artist. She was an amateur working in Michigan and abroad in the first two decades of this century. She made the prints herself – unenlarged contact prints blue on blue (cyanotypes printed by sunlight and fixed in water). Critics have compared her work to Jacques-Henri Lartigue's, who photographed the same era and a similiar leisured class in France. Eastman House has acquired 250 of her prints for their permanent collection.

Lucy Morley was my grandmother; her subject was my family. Her amateur photography was tolerated by us, admired faintly but never so much as her renowned whistling or singing. She was much loved, and missed when she died in the late 40's at the age of 78, but we were astounded when her great-grandson Chris Thompson took a moldy about-to-be-thrown-out box of her negatives (6000 of them) and turned them into fame.

Chris is 23, a student at Rochester Institute of Technology, and a crackerjack artist and photo restoration expert. He'd like to make a book of Lucy's Blueprints.

–SB

Miami, Florida, 1916

Point Lookout, Lake Huron, 1915

San Francisco Ferry, 1908

Higgins Lake, Michigan, 1904

Au Sable River, Michigan, 1915

Pennsylvania, 1908

Pennsylvania, 1908

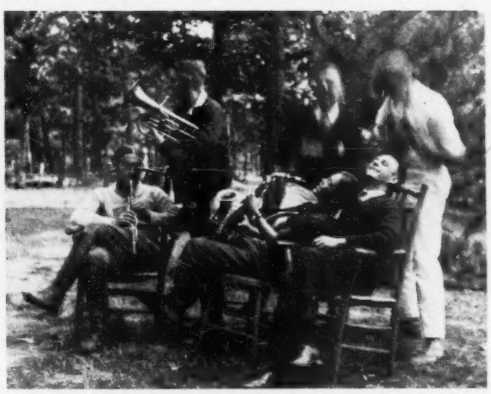
Higgins Lake, Michigan, 1920's

Higgins Lake, Michigan, 1920's

That's Julia Morley, Lucy's daughter, my mother. –SB

California, 1908

Higgins Lake, Michigan, 1920's



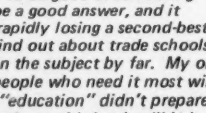
The dude in white, Arthur Brand, was my father. –SB ■

Learning

Getting Skilled

One of the encouraging signs I see in our society these days is that there are many young people NOT going to college, nor planning to. Having made that decision, many just diddle around waiting for something to happen, which it often doesn't. There is a hunger to be good at something. A so-called "trade school" can be a good answer, and it fortunately is an answer that is rapidly losing a second-best reputation. OK. How do you find out about trade schools? This book is the best I've seen on the subject by far. My only reservation is that some of the people who need it most will not read it because their public "education" didn't prepare them to read. If you counsel students, this book will help you a lot. It also lists many schools in a huge appendix. The authors are well in tune with coming trends too; this isn't a rehashed 1938 text.

—J. Baldwin



Getting Skilled
(A Guide to Private Trade and Technical Schools)
Tom Hebert and John Coyne
1976; 262 pp.
$4.95 postpaid
from:
E. P. Dutton & Co., Inc.
201 Park Ave., South
New York, NY 10003
or Whole Earth

WHY GET SKILLED?

In the early stages of researching this book we talked to tall, intense Marshall Palley, Director of the New Vocations Center of the American Friends Service Committee in San Francisco. We told him we wanted to do a book about learning skills and getting jobs. Marshall shot out of the chair. "Here is what I tell young people these days. Pick a vocation and stick with it. Generalization will come naturally, as you feel the need to expand the job to keep it from becoming dead. If you don't specialize, it's difficult for you to do *anything*. You have no defined context within which to work. The liberal arts education that college students get today brings them no closer to knowing what they want to do than when they graduated from high school. It's important to provide training or apprenticeships in specific vocations rather than more generalized education."

•

Skilled people are in demand. Look in tonight's paper. There will be columns and columns of help wanted ads for skilled people — not college people, *skilled* people.

•

Most of the students we've met in private trade and technical schools seem to enjoy having finally taken root somewhere. Their futures for the next few years are fairly clear to them, or else they aren't worried because the process of training and their probable job placement create confidence. That may be the most striking thing about these students: their confidence and savvy about who they are and where they're going.

Most students pay their own tuition. A quarter of the students in trade and technical schools are veterans and another 35 percent have Guaranteed Student Loans that they will repay later. About 15 percent of the students are on various other subsidized government programs. Students are proud that they have been able to shoulder a one- or two-thousand-dollar debt. For many, it is their first step into adulthood.

Having paid that much money, they carefully watch their investment. They are consumer-minded and do not hesitate to complain about anything inferior in a school. We want to emphasize this important phenomenon. Students are willing to pay large amounts of money for quality training, but they want their money's worth.

•

Private trade and technical schools are independent, small, job-oriented, practical, intensive, and student-centered. They are often called "proprietary schools," which means they are privately owned and operated, in hopes of making a profit. They advertise and they use salespersons. They enroll thousands of students who are satisfied with their training. After studying these schools closely for two and a half years, we are still amazed at how well they work. Although public school officials habitually scorn them as profit seekers, we have found more integrity in proprietary school owners than we ever expected to see in educators. They do what they promise to do. This is small business America.

•

Because most private schools are small, with a low student-teacher ratio, students can expect to be close to their instructors. Teachers often give "extra-instructional assistance," that is, counseling and/or tutoring. Mr. Hilbig, a truck driving student at Ryder, told us: "We got some real fine instructors. I had some trouble down-shifting. They took me aside and gave me some special time." A classmate of his, Jim Tinch, agreed: "If you're having trouble, they just tell you to get down from the rig and cool off. They really want you to learn."

In effective schools there is no compulsion or fear. Success is in the air as the students try their wings and take off.

•

The schools in this directory have been accredited by the Accrediting Commission of the National Association of Trade and Technical Schools (NATTS). The Accrediting Commission is listed by the U.S. Office of Education as a nationally recognized accrediting agency under the provisions of Chapter 33, Title 38, U.S. Code, and subsequent legislation.

This directory is current up until September 1976. Each year there are some additions to and subtractions from the list. In future years, should you want to obtain the latest directory, write:

NATTS
Department GS
2021 L Street, N.W.
Washington, D.C. 20036

Subjects taught by these schools are listed below.

Acting
Advertising Art
Air Conditioning
Airline Personnel Training
Appliance Repair
Architectural Engineering Technology
Art
Automotive Mechanics
Aviation Maintenance Technician
Barbering
Blueprint Reading
Brickmasonry
Broadcasting
Building Maintenance
Camera Service and Repair
Camp Instructor
Carpentry
Coin Operated Machine Repair
Construction Technology
Culinary Arts
Data Processing
Dental Assisting
Dental Laboratory Technician
Diesel Mechanics
Dietetics
Diving
Dog Grooming
Drafting
Dress Making and Design
Electricity
Electronics
Emergency Medical Technician
Engraving
Estimating, Building
Fashion Design
Fashion Illustration
Fashion Merchandising
Food Management
Gemology
Gunsmithing
Heating
Heavy Equipment Operator

[Cont.]

College Degrees by Mail

As sex and love are becoming separable subjects, so is accreditation and education. That may or may not be good, but it is so. This intelligent, practical book responds accurately to the situation in American education today. For job opportunity, get some easy degrees. For an interesting life, get some hard education. I can see good argument for getting them separately — you don't cross your purposes or narrow your possibilities so much.

—SB
[Suggested by J. Garwood]

College Degrees by Mail
(A Comprehensive Guide to Nontraditional Degree Programs)
John Bear
1975; 154 pp.

$14.95 postpaid
from:
Rafton & Bear
Drawer H
Little River, CA 95456

There are a few problems in a society based on diplomaism:

1. There is much evidence that there is little connection between degrees and on-the-job performance.
2. There is much evidence that vast numbers of college students are being trained for jobs that simply don't exist.
3. It may well be that the cash investment in a traditional college education is an extremely poor investment, indeed.

•

The Wall Street Journal reported on March 31, 1975, that the average national cost for a private college was about $18,000 for four years; "only" about $11,000 for a public college.

Legitimate Schools Offering Good Degrees to Students Anywhere in the World, With No Required Courses, No Residency Requirement, Solely by Examination, by Evaluation of Prior Coursework, and/or by Evaluation of 'Life Experiences'

A few years ago, no school in the United States fit the above description. Now there are at least three, and the trend is definitely in the direction of the development of other similar programs in other states.

The three U.S. programs are offered through the University of the State of New York, Thomas A. Edison College in New Jersey, and the Board of Governors Bachelor of Arts Program in Illinois. In addition, there is a program available entirely by correspondence through the University of South Africa, and there is the forerunner of all such programs, the External Degree Program of the University of London, over 100 years old, but scheduled for a drastic cutback in the fall of 1977.

Since I believe these five programs offer what is probably the best alternative for a majority of degree seekers, I shall describe each of them in some detail. As I write these words, in August 1975, there are proposals to establish similar statewide or state-sponsored degree programs at least in Florida, Massachusetts and California. But, as I said, none of these five programs has any residency requirement. You can earn your degree from the University of the State of New York whether you live in Yonkers or Yugoslavia, Albany or Australia.

At the present time, only London and South Africa offer masters and Doctors degrees, and London's are only for people who have earned their Bachelors at London previously. But there have been serious discussions of a comparable Masters program in New York and elsewhere, although it may still be some years off. I seriously doubt there will be such a Doctors program in the U.S. for many years, if ever.

The Flying Circus of Physics

I'm always looking for good physics books because I personally feel that in this day and age a person ignorant of physics simply can't understand much of what is going on. But physics isn't usually considered an easy subject, and many people seem to need an approach that is different than the usual clothed-in-mystery book that ends a particularly difficult discussion with "we leave it to the student to work this out." (No answers in the back of the book either.) Here's yet another way to get into it: twang the curiosity with a maddening question and then give the bibliography that holds the answer. This will mean more library work than many will be able to hack, but for some this book will be just the goad necessary to bridge the gap between pure what-good-is-it abstraction and reality. I found it fascinating.

—J. Baldwin

The Flying Circus of Physics
Jearl Walker
1975; 224 pp.
$5.50 postpaid
from:
John Wiley & Sons, Inc.
One Wiley Dr.
Somerset, NJ 08873
or Whole Earth

Horsemanship
Hotel-Motel Training
Illustration, Design
Industrial Management
Inhalation Therapy Technician
Instrumentation
Interior Design
Jewelry Design, Diamond Setting
Legal Secretarial/Assistant
Loss Prevention Security
Machine Shop
Meat Cutting
Mechanical Engineering Technology
Medical Assisting
Medical Secretarial
Medical Technician
Metalurgical Technology
Millinery
Motion Picture
Motorcycle Mechanics
Nurses Aide
Office Machine Repair
Operating Room Tech.
Optometric Assisting
Orthopaedic Technician
Painting and Decorating
PBX Switchboard
Photography
Pilot, Commercial
Plumbing
Printing
Real Estate
Sanitation
Surveying
Tailoring
Tool and Die
Travel
Truck Driving
Upholstery
Veterinarian Assisting
Vocational Nursing
Watchmaking and Repair
Water
Welding
X-Ray

The next time you're mulling over a glass of milk, examine the milk film at the edge of the milk as you tip the glass. Between the film on the bottom of the glass and the milk there is a clear area a few millimeters wide. Why is the clear band present?

Satterly, J., "Casual Observations on Milk, Pickled Beet-Root, and Dried-Up Puddles," *Am. J. Phys., 24,* 529 (1956).

•

While watching TV in an otherwise dark room, quickly run your eyes from about a foot to the left of the screen to about a foot to the right. You will see a bright, detailed, ghostlike image of the TV picture floating in space to the right of the screen. You may even see three or four images, all right-tilted parallelograms. Why are these ghost images formed, and what's responsible for the tilt? Do you see the same sense of tilt if you move your eyes in the opposite direction? Are there ghost images for a rapid vertical scan of your eyes?

Crookes, T.G., "Television Images," *Nature, 179,* 1024 (1957).

BOONE

BY GURNEY NORMAN

Photographs by Gene Meatyard

I've been here in Kentucky a little over a year by now. We left the Yadkin the spring of '69 and now the spring of '70 has come and gone, it's high summer and I'm by myself in this gorge just happy as a coon. I ain't a bit homesick. I think about Rebecca, I remember her well and I remember the children too and think about them with affection. My brother Squire has been here once with news about them and he'll soon be here again. It was good to get the news when I did but I'm not laying out here brooding for want of more. I'm not brooding about anything these days. I'm just loafing around in this river gorge, sleeping in the caves, eating fish and berries, whatever I can find to eat without having to work too hard to get it. This gorge is off the main trails, I ain't seen no sign of Shawnees. It's a real easy and restful place to be. All I do is loaf around in the sun, I go naked half the time. I like to stretch out on these big rocks by the river and let the sun bake me. Sometimes I'll go all day and not put any clothes on. I'll swim in the pools and then stretch out on a rock in the sun and lay there like a snake all afternoon. What I like to do at night is get back in my cave and build me a fire for an hour or two, sit looking at it, letting it warm me. I like a fire at night when I figure it's safe to have one. There's one cave with a natural hole up through the top that makes a perfect smokehole. I get back in there and make a fire and maybe I'll roast a perch and eat it, and then if I feel like it maybe I'll whittle a little, carve me out some little doo-dad just for pleasure. I like to smoke my pipe by the fire. Squire left me his tobacco, I smoke a little every night and really enjoy it. After my fire dies down I'll move up to the front of my cave and sit there listening to the river flowing in the dark. I'll hear the critters talking and singing and stirring around in the night. Sometimes I go out and stir around with them, walking slow and easy, feeling the breeze on my skin, feeling the moonlight on me. And I'll think: I couldn't behave this way if my buddies was still with me. Old Finley, old Holden, and Mooney and that Cooley. They didn't have nothing on their minds but pelts. Work hard, make money, get home quick was all they could think about. Squire's reasonable. Squire's a good solid steady man. And Stuart was good to have along. They was all good in some ways, we made up a good company together but the trouble was, you couldn't get quiet in your mind with the fellows around. Not in any deep way. Since they went back to the settlements I've been here by myself having the finest time, having the most unusual dreams, the clearest thoughts I've ever had before. I don't believe those men had any thoughts a tall except about getting home as rich and quick as they could. Of course that's what we come here for, the purpose of trapping and hunting. That was my purpose too, which shows how strange things are, how things come about in mysterious ways. Ways you don't plan or intend and can't understand even after they happen. One thing leads to another but you can't always tell which one thing is going to lead to which other particular thing. We hunted and trapped all last winter and had us the biggest store of pelts that ever was. But then just as we was starting home with our goods, this gang of Shawnees fell on us and robbed us and took everything we had. Took it all. We followed after 'em and by surprise we managed to rob our stuff back and set out toward home again. But I'll be damned if them boogers didn't come right on and follow us again, and surprise us, and rob all that plunder back again. It's a wonder somebody didn't get killed. My fellows said that was enough for them. All of them except Stuart went on home. Stuart stayed on with me a

The photographs are of the Red River Gorge in Kentucky, where Daniel Boone is thought to have been for those lone two years of his, 1769-70 (see afterword). They are from **The Unforseen Wilderness – An Essay on Kentucky's Red River Gorge,** *with Meatyard's photographs and text by Wendell Berry ($6.95 from University Press of Kentucky, Lexington, KY 40506).*

Gurney Norman, born to land now destroyed by strip-mining in Kentucky, lives in the Bay Area and experiments with short narrative. His episodic **Divine Right's Trip** *was in THE LAST WHOLE EARTH CATALOG.*

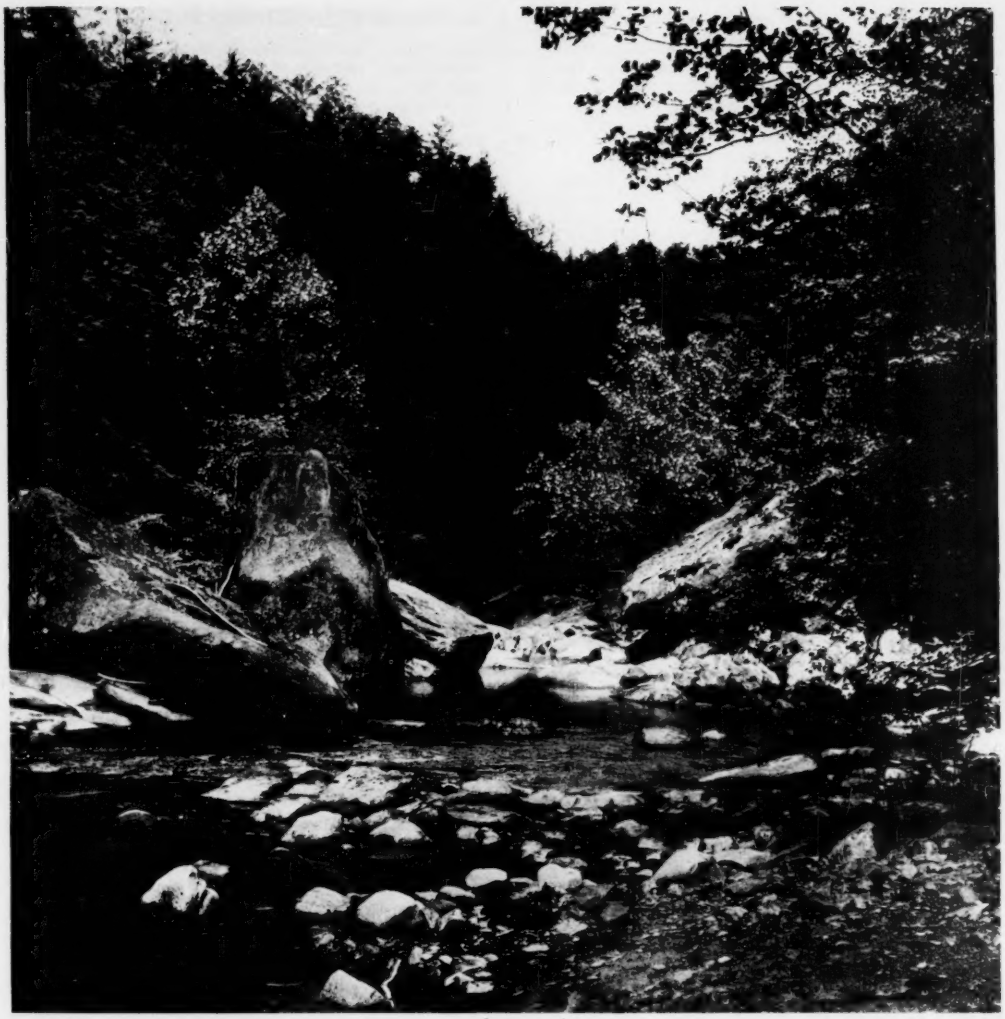
"Boone" will appear in an anthology of new Appalachian writing titled **Renascence,** *to be published later this year by The Southern Appalachian Writer's Co-op, Box 743, Whitesburg, KY 41858.*

–SB

while but then he disappeared one day and I never did see him no more. He went on home, I reckon, or maybe got lost or killed. Maybe the Shawnees took him, I just don't know. The fellows gone. The purpose gone. The fellows asked me before they left, they said Daniel, ain't you coming home with us? I said no. When they said why, I couldn't tell 'em. I didn't know my ownself why I didn't want to go. I could feel in me plain as day that I wasn't ready yet for home. It was like I knew I might find out something I needed to know if I stayed in these woods by myself. But I didn't have any words to say that with. And then when Squire was getting ready to go he said to me, Daniel, are you coming? I said no. He said, what'll I tell Rebecca? I couldn't think of a thing. I knew he'd tell her I was well, tell her hello for me. But I had no message for my wife. I had no word to send her and I had no purpose for staying that I could report. I had no purpose and no words to say to anybody. I talk to myself and sometimes I sing out loud. But there's times I don't care if I ever speak to anybody else again as long as I live. That's a strange thing to think about, but thoughts like that are crossing my mind these days. All kinds of strange things are crossing my mind since I've been alone out here and when I'm asleep too, till sometimes I can't tell if I'm asleep or awake. The first year out here I thought about home every day. I thought about my wife and children. I just naturally figured I'd be going back soon as we harvested enough furs to make the trip worthwhile. But then as the year went along I quit thinking about home so much. I didn't quit missing Rebecca exactly. It was just that I got used to not being where she was. It got to feeling purely natural to be here by myself and what I know is that I could stay on here in this place alone the rest of my life and be satisfied. I could just let my whole life and name and history disappear into these trees and rocks and rivers. I could do

that. I could also go back home, be a husband and a father again. I could associate with my neighbors, pay my debts, stay in close to the house most of time. I've done all that and I could do it again but what's new in my mind is the not knowing if that's what I will do. There's such a wonder about this place. There's such a song to sing about it. It's like Eden. Buffalo, turkey, all game big and small. There's salt, the forest floor is covered with mast, there's rivers of the purest water, with more kinds of fish and frogs and turtles than I can name. Than have ever been named. It's a heaven of a place out here and I feel like an angel in it. I never knew it was in me to feel like an angel. What would it be like to go on feeling like one, to stay forever in this place till I disappeared within it? What would that be like? I just wonder; what would staying here forever by myself be like?

The other afternoon I was laying asleep on a rock by the river and I dreamed a snake was coiled up in me. I felt it move around in my chest and guts, I felt it crawl up my throat and out my mouth and across my face. I saw it move down off the rock to the water. I saw it swim across the water into the woods on the other side. And I dreamed that a young doe came up to me in the woods and motioned for me to follow her. It was dark and a rain was falling but I followed along behind till we came to a laurel dell at the base of a rock cliff where a young buck stood, waiting for us. The doe touched his neck with her nose and the buck nodded and fell in behind us walking. The three of us walked on till we came to a river ford. The doe said, kill this buck and skin it and put on its hide. I killed the buck with my knife and skinned it. I put on his hide like a cloak and the doe and I walked on into the night together till we came to the top of a hill. We stood together looking at the moon, letting it shine on us, until the hill became a rim of a crater on the moon, and I was alone upon it. I laid down alone and gazed at the shining moon that I was on. I slept, I dreamed that I walked down to the center of a crater to a hole that opened through the bottom of the moon. I dreamed I stepped off into that hole and fell through the dark so swiftly it woke me up. I was in my cave, lying on my back, gazing up through the smokehole at the full bright moon in the sky. I felt the warm ashes in the fireplace. A few embers were still alive, soon I had a new fire. I sat a long time looking into the flames. The flames are like the sun, I thought. And when I thought of the sun I thought of the moon and I looked up through the smokehole but now I saw only the light of the moon. The earth had turned and the moon had passed from view. I hated to leave my fire but I did without looking back. I walked out of the cave among the rocks that led to the river bank. The moon lit the water silver. The river was a streak of light playing in the gorge. I walked across the water on the rocks, then climbed the bank on the other side. I climbed the hill, passing through tangled laurel and rocks slick with moss. I came to cliffs that rose up high above the gorge. I climbed the cliffs till I got to the very top where the pines were short and scrubby, not much taller than me. I could see the full moon clear from there, straight above, round as a pumpkin, shining the purest silver light I'd ever seen. It fell across me, across the whole plateau of pine, it lit the far horizon of the hills, it fell into the gorge making shadows on the cliffs that I had climbed. The gorge was illumined, showered upon and shadowed by the full clear fall of shine. The gorge was a crater. I was on the rim of a crater of the moon. In the moonlight I began to walk down the crater's side, circling and doubling back till I reached the bottom, the center of the bottom, reached the opening. Without hesitation I stepped into it, and fell until I woke again beside the remnants of my fire. The ashes were still warm. With both hands I scooped up ashes and pressed them against me. I pressed them warm between my legs, into my belly, I rubbed their heat into my flesh, down each thigh to my knees, then with more ash down both legs to my feet. I placed my feet in the pile of ashes, buried them deep while I rubbed my chest and neck and face and arms with the soft warm ash of the burned wood. When I was covered and warmed all over I stood and walked around my cave, wearing the ash like clothes. But I longed for the water and soon I was among the rocks by the water's edge again. I stood beside a long, deep pool looking at my image in the water, reflecting silver in the moonlight. I couldn't see my face but I saw my shape clearly and the shine of the ash on my skin. I recognized the shape of the figure in the water as my own. But the figure was a stranger too who moved in mysterious ways. The figure moved like a woman moves. When I lifted my hand the figure lifted its hand, but like a woman. I began to dance with this woman of the water, I moved on the rocky shore while she moved with me in the water. I raised my hand. She raised her hand. I shifted my feet and turned. The woman turned. I bowed low and most elegantly, and she bowed too. Our faces were nearly touching. I brought my arms around in a swoop and she did too until our hands were nearly touching. Then my hands sank into the water to the wrists, instantly the ash washed away and my hands lured my entire body into the water, I plunged head first into the pool and swam, down, reaching deep and turning over and over in the cold river. The ash washed off like dust. I turned in the water and turned again, I was a fish. I had no need to breathe, no urge to leave the water. The water was my habitat and I lay suspended in it, running my hands over my body, feeling my own flesh and delighting in it. My arms felt like a woman's arms, my stomach, legs, everywhere upon me I could feel was like a woman. I looked around for the woman I had seen in the water. I swam deeper and searched along the ledges but she was not there. I looked up but all I could see above was the wavy round light of the moon. I swam toward it, reaching for the surface. I pulled through the water toward the bright image of the moon, up, toward the surface and the warm air of the night. But the longer I swam the colder the water became, and I realized I was swimming down, the moon was down. The water grew colder and colder as I went deeper and for the first time I did not feel at home within the deep. But as soon as the small fear hit me, the woman of the water appeared beside me and touched me with her hand. She swam in front of me and held my face in her two hands, pulling me close. She pressed her mouth against mine, she wrapped her legs around my legs, she held me tightly in her arms while my arms floated freely out to the sides. Kicking gently, we swam slowly together, down, deep toward the shining moon. We approached the moon. Its light was brilliant, yet comforting to the eyes. We could see its craters, its hills and plains and valleys spread out before us as we swam entwined on through the brilliant water. Our motion carried us to the rim of a crater on the moon, and past it, down, over the rocks and crags of its steep side to the bottom where a hole lay open before us. Come, it said. Fall. Swim through to the other side. We answered. Entered. Together. A cave in a dream's dream. ■



Notes On The Red River Gorge and Some People Who Have Seen It

I saw Gene Meatyard's photographs of the Red River Gorge in Kentucky before I ever saw the Gorge itself. As a child growing up in the Kentucky mountains only two hours drive from the Red River country, I was a frequent visitor to Sky Bridge, a natural rock bridge that overlooks the rugged valley of Red River. But to view the valley from Sky Bridge is a very different thing than walking along the river and its tributaries, being in and of the place as a creature, instead of a mere spectator looking down upon it from a height. My family must have visited Sky Bridge two or three times a year, until I was grown, usually to eat a quick picnic lunch on those long drives on old Route Fifteen as it wound between Hazard and Lexington. But never once did anyone in the family suggest that it was possible to actually go down in the valley where the water was, the shade, the cool, the secret rocky places. No. We were going another direction, at a faster pace. We were bound away from the land and water. However beautiful the river valley, you couldn't make a living there. No jobs for unemployed miners in Red River Gorge. Let's eat our picnic quick and keep on, get to Cincinnati, get to Dayton, I hear they're hiring up there.

Then one day in my 33rd year, after I had moved away from Kentucky and returned for a visit, friends introduced me to Gene Meatyard. Gene showed me his portfolio of photographs of the Gorge. There must have been a hundred in the sheaf, all black and white, all, or nearly all, without any people in them. They were pictures of just the place itself. Rocks. Water. Trees. My first reaction was: I've never been there before. My second reaction was: I have been there. I'm there now. These pictures put me there. I remember feeling a slight jealousy that Gene, who lived in Lexington at the time, had experienced a place in the mountains of my birth in a far truer and more intimate way than I ever had. He'd recorded the place with his camera, seen magic, made art. I was jealous of the achievement.

But of course more thankful than jealous. Gene's photographs were a gift. They made it possible for me to go on my own and make the Gorge my place too, as many people have

done in recent years. Since looking at Gene's photographs six years ago I have camped and explored along the river and creeks many times. Slowly, hollow by hollow, creek by creek, I'm discovering the Gorge. I think about Gene's own process of discovery of the places that one by one I come upon. Gene died of cancer the year after I met him. But because his photographs exist in published form, his eye, his perception, remain alive to guide my own eye and perception. And imagination.

I think about my other predecessors who have seen and experienced the secret places in the Gorge. Stone age people roamed that country, dwelling in the cliffs and ledges. Almost certainly, Daniel Boone saw the Gorge. There is general agreement that a still-existing shelter, built under a certain ledge, was built by Boone probably in 1769-1770 when he spent two years alone in the Kentucky country, exploring and trapping. But I don't really care if Boone lived in the actual Red River Gorge or not. I mean, the doubt about it doesn't get in the way of my imagination. I don't intend the "gorge" in my Boone story to be a literal place. It's the landscape of the mind that I care about, as one can get access to it through imagery triggered by details of actual land.

I have tried to get the historical names and dates accurate. Boone did go trapping with a party of men whose names are known. They did have a famous encounter with an Indian party, and Boone did stay on alone in Kentucky when his fellows decided to go back to the settlements in Carolina and East Tennessee. But what Boone thought while he was alone in the woods, I know only as one knows his own dreams. Daniel Boone lives in the American subconscious, the myth, the dream, as vividly as any of the famous one-dimensional national heroes. But in my personal dream, he is far more complex and interesting than television and movies and the State of Kentucky make him out to be. Rugged frontiersman, skilled woodsman, yes, yes. But murderer, no. John Wayne could never successfully portray the Daniel Boone I imagine. Boone was too much a sensualist. A lovely woman lived inside Boone. He was a lover. Did you know that Boone's fellow settlers tried him for treason for sympathizing with the Indians too strongly? Certainly Boone was in no hurry to escape Indian captivity, to leave his Indian bride. Treason, indeed.

Many themes run through Boone's life and career. It is my conjecture that one of those themes is androgeny. Boone was a frontier man with his female side intact. He was free of the male-aggressive instinct to kill and destroy, buffalo and Indians and Vietnamese, for the pure pleasure of killing.

He was a visionary. He saw. Perhaps he saw the Red River Gorge. If he did, I doubt he saw it better than Gene Meatyard. I know both men saw it better than I have so far managed to do. But one learns. Gradually the closed eye opens. Gradually the woman is freed.

–Gurney Norman

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–SB

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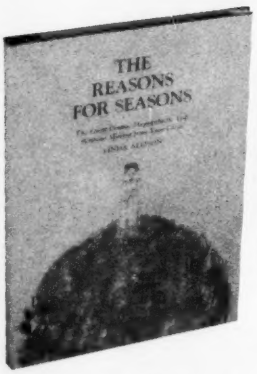
New monitor screens for false 'brain death' – Apparent brain death, as measured by the electroencephalogram, can be a false verdict. The EEG reflects surface electrical activity. A new monitor developed at the University of California-Irvine detects signals from deep in the brain—signals too subtle to be picked up by the EEG.

The device was designed by Arnold Starr of the college of medicine. Among the 400 patients on whom it has been used, 26 had suffered apparent brain death as measured by the EEG. But several of the 'dead' patients showed responses to sound in the auditory brain stem and later recovered. Their comas had resulted from drug overdose.

The Brown Paper School

There is a fine new series of books for teachers, parents and kids just begun called the Brown Paper School. So far I've seen three titles, **The Reason for Seasons, My Backyard History Book** *and* **The I Hate Mathematics Book.** *Each one has an interesting subject, lots of activities and ideas, they're unusually (and well) organized, and the graphics are great! I'm looking forward to new titles in this welcome series. Soft covers or library bindings.*

–George Cope

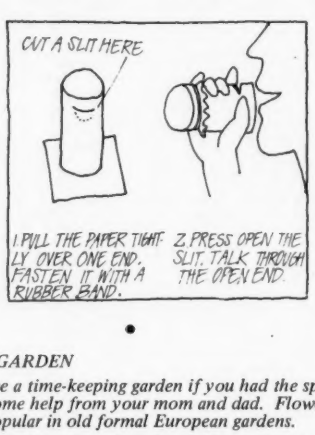


The Reasons for Seasons
(The Great Cosmic Megagalactic Trip Without Moving from Your Chair)
Linda Allison
1975; 121 pp.
$6.95 postpaid
from:
Little, Brown & Co., Inc.
200 West St.
Waltham, MA 02154
or Whole Earth

MAKE A VOICE DISGUISER

Here is a simple device to make for some of your own Halloween shenanigans.

You need a paper tube, a square of wax paper, and a rubber band.

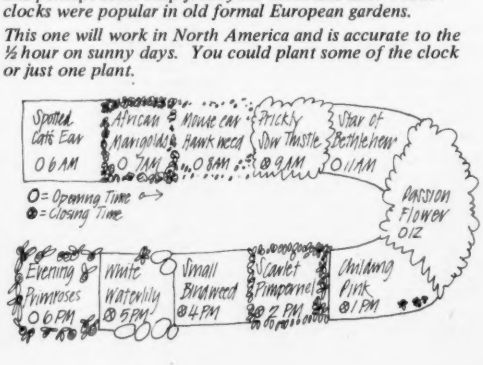

CUT A SLIT HERE
1. PULL THE PAPER TIGHTLY OVER ONE END. FASTEN IT WITH A RUBBER BAND.
2. PRESS OPEN THE SLIT. TALK THROUGH THE OPEN END.

•

GOOD TIME GARDEN

You could have a time-keeping garden if you had the space, and perhaps some help from your mom and dad. Flower clocks were popular in old formal European gardens.

This one will work in North America and is accurate to the ½ hour on sunny days. You could plant some of the clock or just one plant.


Spotted Cats Ear 6 AM
African Marigolds 7 AM
Mouse ear Hawk weed 8 AM
Prickly Sow Thistle 9 AM
Star of Bethlehem 10 AM
O = Opening Time
● = Closing Time
Passion Flower 12
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White Waterlily 5 PM
Small Bindweed 4 PM
Scarlet Pimpernel 2 PM
Orange Pink 1 PM

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And 5 Anonymice

Ivan Illich misquoted

This morning I received from you page 21/22 torn from the summer 76 issue of the Coevolution Quarterly where I am misquoted, and a $10 check, seemingly in payment for the right to do so. I return the check.

I have indeed often expressed my wonderment at the fact that, notwithstanding some excellent reviews "Prisoner of Mao" by Bao Ruo-Wang has been studiously overlooked by US China fans, but I would never, but never have said that this book "is the only thing out of China that I (he) find(s) believable."

I trust that you will publish this letter prominently and in its entirety, and also ask you to circulate copies of it to people who pick up your misquote.

Ivan Illich
Cuernavaca, Mexico

Sorry to mistake your meaning. I quoted what I thought I heard. I know the annoyance you must feel. Recently The Village Voice *quoted me as saying of Governor Brown, "Something seems to have happened to him at the hands of the Jesuits which was not a good education." What I said was "Not just a good education." And they had a tape recorder.*

The $10 was for suggesting the book. I hope you'll suggest more.

—SB

Crediting

We failed to credit the photograph of a redwood which appeared on p. 67 of the Summer '76 CQ. *It was taken by Nicholas Wilson, who correctly complained about the oversight.*

Credit is a delicate matter. I know I feel badly when we've pre-printed part of someone's forthcoming book with fanfare which supposedly helps publicize the book, and they don't make the customary mention in their book that part of it previously appeared in The CoEvolution Quarterly. *A magazine's existence is a kind of consensus reality. We need all the legitimacy we can get.*

*Offenders include Sam Keen (*To a Dancing God*), Paul and Anne Ehrlich (*The End of Affluence*), Louise Lacey (*Lunaception*), Medard Gabel (*Energy, Earth and Everyone*), Dan O'Neill (*Comics and Stories*), my (*What Do We Use for Lifeboats When the Ship Goes Down*), and Alan Ternes (whose* Natural History Magazine *made no mention of* CQ*'s collaboration on a Lynn Margulis article on Gaia).*

*People who have done right are Michael McClure (*Jaguar Skies*), Lawrence Ferlinghetti (*Thoughts*), and Andrew Fluegelman (*The New Games Book*).*

—SB

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—Jeanne Campbell

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—SB

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Note to a reviewer

Dear _____

Your reviews need to be shorter (2 paragraphs are usually our maximum — J. Baldwin's are exemplary) and pithier. By pithy I mean containing some bit of experienced insight of yours — mere tone or half an anecdote can do it. There's no need to repeat messages of the book (as Philip Morrison so excellently does in **Scientific American**) — let judicious stunning quotes do that for you.

What the reader wants to know is what's wonderful about the item — what makes it better than all the others (say which others if we've listed them), or what new territory it opens up, or what special excellence of execution it has.

And what and who it's good for — it's USE. I usually start with that.

Let any negative comments be merely a clause in the middle. If they are at the beginning no one will read further. If at the end the reader will assume that it's your conclusion.

If the item is not wonderful, don't review it.

Stewart

The strangeness of gift subscriptions

Last Christmas, gift subscriptions saved us. Over 1200 in two months — $7,200 — it made an important difference in a lean season. We hope for a repeat.

However Mike Young tells me that gift subscriptions are usually considered a non-renewable resource. The givers have made their effort and are less likely to repeat it. The receivers made no effort and are unlikely to start one. Each party figures the other will renew, so neither does. We stand ignored in the background, anxiously whistling "Jingle Bells."

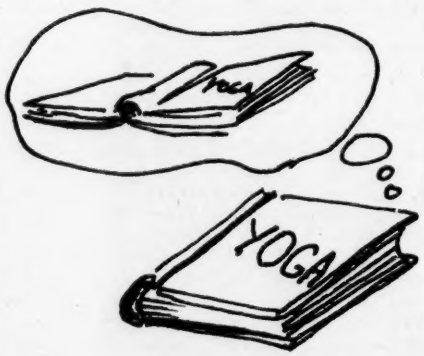
By far the bulk of **CQ**'s *gradual growth toward solvency is through the person-to-person contact of enthusiastic readers. We've had no review in a national publication. Our direct mail promotion is modest. The possibility of breaking even and becoming securely perpetual is now in sight, but just as the inheritance from the* **Whole Earth Catalog** *dwindles entirely. Hence these remarks.*

The strangeness of gift subscriptions is that the-gift-that-keeps-on-giving, doesn't, unless it's renewed.

Mike Young has compiled a list of people who might be grateful recipients of **The CoEvolution Quarterly**:

Friends	*Politicians*	*Jails*
Lovers	*Media*	*Friends in the military*
Relatives	*Local poets*	*Crisis centers*
Teachers	*Bartenders*	*Libraries*
Room-mates	*Shrinks*	*The person who keeps stealing your copy*
Co-workers	*Dentists (for waiting room)*	

—SB



G. Russ Youngreen

CoEvolution Quarterly — Fall '76 financial report

We think we have finally come up with a comprehensible format for our financial reports. There are two sets of figures here. The first set represents an actual accounting of the last three complete months (one full cycle of our quarterly publication); the second represents our attempt to predict the next three months (the fate of the issue you hold in your hands).***

—Andrea Sharp

*We always say that.

**Next issue we'll compare prediction and reality.

—SB

	May, June, July	Aug., Sept., Oct. (Prediction)
EXPENSES		
Salaries and fees		
Office	$ 8,662.80	$ 9,000.00
Production	5,383.50	5,400.00
Editors	6,899.48	9,900.00
Contributors	4,744.00	4,800.00
Office rental, materials, etc.	6,445.45	7,000.00
Phone	1,367.98	1,300.00
Promotion	8,883.68	5,300.00
Printing	15,841.58 (33,000 copies)	16,000.00 (34,000 copies)
Subscription process and mail	6,474.15	3,000.00
Shipping	518.83	670.00
Business reply	500.00	500.00
Refunds	70.11	50.00
Total	$65,791.56	$62,920.00
INCOME		
Subscriptions, gifts and renewals	$28,780.12	$39,000.00
Retaining and Sustaining	3,270.00	1,000.00
Back issues	6,351.69	7,000.00
Distribution	14,035.11	11,500.00
Total	$52,436.92	$58,500.00
NET LOSS	($13,354.64)	($ 4,420.00)

Gossip

In the gossip column last issue was a short notice that people who were willing to contribute $1,000 could audit Gregory Bateson's Mind/Body Conference. Before we knew it we had three interesting auditors and $3,000 to help pay for the conference.

Gee.

Listen, there are some other things we would like:

- *An additional general-purpose editor and researcher, better than me please, so the magazine can extend its range and I can extend mine. A lot of our best stuff gets found when I'm out ranging, but I can't get out enough. It's a salaried position, $1,000 a month, life among the houseboats, non-ratrace publishing. We need a professional, incipient or realized, but damned good. Send examples of your writing and editing; and a photo helps.*
- *Fiction, new or old-and-out-of-print, compelling enough to run as a serial through several issues.*
- *More material relating to watersheds for the Winter issue. The Watershed editor is Peter Warshall, who needs whatever you have by October 15.*
- *A piece by someone knowledgeable on the peculiar state of worker's unions these days. Something large is amiss.*
- *What else? Well, we're all single folks here (except Andrea).*

Ron Jones, perpetrator and reporter of his own fascist takeover of a high school ("Take As Directed," Spring CQ *'76), has had some response to his article. It's being produced as either a ninety-minute TV special (ABC and NBC are dickering for the privilege) or as a commercial film. In addition Norman Lear ("Mary Hartman, Mary Hartman") wants to make it into a Broadway play.*

Before he got an agent to handle the traffic Ron was contacted by over sixty writers, agents, and producers. "I had people visiting my home in droves. It got hysterical. I forgot their

G. Russ Youngreen

names. They all had grandiose schemes. Everyone from Alan Alda's agent — the guy on "M.A.S.H." — to someone who wants to sell Third Wave T-shirts. The CQ *seems to be read by people in the media."*

The agent Ron settled on is Frederick Schorr, of Bloom/Miller in Los Angeles (8693 Wilshire Blvd.). "They were by far the most sophisticated. Within two days after the story came out they had assigned writers to it and were on the phone to me every ten minutes churning out a script. Within a week I had a contract sitting on the table. Terms? It's strictly a contract of representation — 90 days to have the property and present it. They offered me $5,000, but I said, 'No, that doesn't seem right to me. Take the property and see what you can develop out of it.' "

Paramount will do the filming.

Meanwhile, another regular in these pages, economic critic Hazel Henderson, has been invited to join Jimmy Carter's band of economic advisors.

And fans of Willie "Small Banana" Williams (p. 116) will be glad to know that he not only stayed out of jail, he got a minor position in Governor Brown's administration.

There's a new face in this office. Isabella Kirkland, 22, an artist and former barmaid, of Quaker and Richmond, Virginia, background, now tries to keep up with our subscribers.

John Shuttleworth

(Gossip continued)

We had an interesting exchange recently with John Shuttleworth, editor and publisher of **The Mother Earth News**™ *[a useful magazine – $10.00/year (6 issues), $2.00 single issue from P.O. Box 70, Hendersonville, NC 28739]. Jeanne Campbell was doing a promotional mailing to 10,000 names we had bought from the* **Mother Earth News** *subscriber list. She asked Shuttleworth if he had anything nice to say about* **The CQ** *that we could put in the mailing.*

Shuttleworth wrote back, "I feel that **CQ** *is nothing but 1969 endlessly replayed. It was hot stuff as the WEC, but it's endlessly boring now. I don't read* **CQ** *and I don't advise anyone else to." Jeanne showed me the comment and suggested, "Let's use that with the mailing." "Good idea," said I, "but John won't let you. Give him a call." She did. Sure enough, Shuttleworth wouldn't go for it – in the interests of maintaining "a united front."*

United front. Whatever for?

Here's two more items from Jeanne Campbell. "Nomination for Most Valuable Subscriber. California **CQ** *subscriber Alan Naumann decided to go travelling this summer and figured he'd try to sell the* **CQ** *while he was at it. So far he's called twice from Florida to say he's secured us two new distributors, one in Pinellas Park and one in Miami."*

[Item Deleted]

A business item. Our subscription rate has been $8/year since June. People who send in the old amount of $6 will get a subscription for three issues and an invitation to remit $2 more for the full year.

I found out recently the going price for something I've always wondered about. Someone called from Young and Rubican to inquire if I would appear in college newspaper ads for Gallo Wine, for $5,000 - $7,000. "Sorry. I can't tell one wine from another." "That doesn't matter," he began.

It's not that I'm shy. Appearing on ABC's "Good Morning America" morning show July 13 was a complete pleasure, like Dick Cavett years ago, and utterly unlike the NBC "Today" grind. Even the gaffers were polite and cheerful. In New York. In a TV studio.

Rusty Schweickart, the NASA astronaut and **CQ** *contributor, turned out to be a boon companion for two weeks of flat out vacation in Nova Scotia. He biked 400 miles (I didn't) with seven teenagers, five of them his and Clare's. Grace under pressure. My recall is a lovely blur of mackerel, raspberries, mushrooms, islands, and old sailing ships.*

While Peter Warshall takes on the editing of part of the Winter **CQ** *I'm going to hie to Sacramento for a couple months of part-time employment with Governor Brown. Doing what? The flow knows, not me.*

I will keep in mind J.D. Smith's advice to Andrea when she was leaving for two weeks vacation.

J.D.: "Bye. Don't forget to clutch."

Andrea: "What?"

J.D.: "Between gears."

Another gearshifter is Andrew Main, our camera and printer-liaison man, who after several years of practice at the San Francisco Zen Center is moving up to the varsity zazen squad. He's going to the Tassajarra Zen Mountain Center for a year or more. His expertise and attention to detail were exemplary; Don Ryan is taking over the slot. We celebrated Andrew's retirement with a rare midday party featuring cakes, a gift certificate for the warm garment of his choice (Tassajarra is glacial in the winter), and champagne, which made volleyball even looser than usual.

When Andrew was on his way out through the library I called after him, "Come back when you get enlightened!" "Sure!" he replied.

He was still laughing as the front door closed behind him.

–SB

The CoEVOLUTION Quarterly

Editor Stewart Brand

Research Traffic & Accounting Andrea Sharp

Production Manager & Paste-up Diana Fairbanks

Distribution, Promotion, & Library Jeanne Campbell

Subscriptions & Back Issue Mike Young, George Keenan, Isabella Kirkland

Typesetting Evelyn Eldridge

Camera & Paste-up Andrew Main, Donald Ryan

Business Advisor Andrew Fluegelman

Soft Tech, Shelter & Nomadics evaluations J. Baldwin

Land Use evaluations Rosemary Menninger, Peter Warshall, Richard Nilsen

Craft evaluations Diana Sloat

Personal Computer section Marc Le Brun

Proofreader Pam Cokeley

Illustrations G. Russ Youngreen, Philip Garner, Dan O'Neill

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Hatcher Trade Press, San Carlos (cover & map)
Recorder Sunset Press, San Francisco (bindery)
Glue-Fold Co., Menlo Park (envelopes)
Aqua-Velop, Cupertino, CA (map negative)

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For your convenience a postage paid envelope may be found behind this form, along with contents of back issues and what the new posters and postcards look like.

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☐	Starting; ☐ Fall 1976 ☐ Winter 1976						
☐	$2 ____ copies: The following back issues (contents overleaf)	☐	☐	☐	☐	☐	☐
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☐	$4 ____ copies: Poster of "CoEvolution Face"	☐	☐	☐	☐	☐	☐
☐	$2 ____ sets: Ten postcards of "CoEvolution Face"	☐	☐	☐	☐	☐	☐
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Back Issues

Issue No. 1, Spring 1974, is out of print.

No. 2, Summer 1974

Setting Food By *Doris Herrick*
Ehrlich's Guide to the Apocalypse: Food *Anne H. Ehrlich and Paul R. Ehrlich*
Sanctity and Adaptation *Roy A. Rappaport*
Land Banking *Huey Johnson*
Gravity Engines and the Diving Engine *Steve Baer*
New Games Tournament *Pat Farrington*
Salons and Their Keepers *Stephanie Mills*
Notes on Provisioning a Small Boat for Extended Cruising *Kathleen Pumphrey*
Apple Picking *Rick Fields*
Bookmaking Access *Robin Rycraft*
Making and Playing the Shakuhachi *Monty H. Levenson*
Gorf *Michael McClure*

No. 3, Fall 1974

Edited by the Black Panther Party *Huey P. Newton, Elaine Brown, Ericka Higgins, David DuBois*

No. 4, Winter 1974

"The whole system is out of whack" *Dale Jorgenson*
Energetics' Shortcomings *Hazel Henderson*
Enough Energy for Life & The Next Transformation of Man *Lewis Mumford*
The Creature and its Creations *Gregory Bateson*
This Superfluity of Naughtiness *Warren McCulloch*
"Where!?" *Carl Sagan*
Metric System Con *Steve Baer*
A Canadian Home, 1973 *Robert Frank*
Lunaception *Louise Lacey*
To South America *Lynn Meisch*
The Great Gaming-House *Kelly Yeaton*
The Entire History of Man *my*
Dharma Taking Root in the (south) West *Zim*

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2025, If . . . *R. Buckminster Fuller*
Energy Choices *Medard Gabel*
Getting Specific for a Porpoise *Eugenia McNaughton*
Sociobiology *Gina Bari Kolata*
The Culture of Agriculture *Wendell Berry*
The Preservation of Old Buildings *Wendell Berry*
Energy Stories *Steve Baer*
Nitinol: Torque of the Town *Fred Gardner*
One Highly-Evolved Toolbox *J. Baldwin*
Jerusalem: Innerviews *S.N. Durkee*
Jack and the Monster *Gurney Norman*
Sesshin Lecture *Zentatsu Baker-Roshi*
The Posthumous Journey of the Soul—Myth & Science *Stanislav Grof, M.D. and Joan Halifax-Grof, Ph.D.*

No. 6, Summer 1975

What Do We Use for Lifeboats When the Ship Goes Down? *my*
Living on a Lifeboat *Garrett Hardin*
The Atmosphere as Circulatory System of the Biosphere—The Gaia Hypothesis *Lynn Margulis and James E. Lovelock*
Who's Earth *Russell Schweickart*
Perspectives in Ecological Theory *Ramon Margalef*
Seed Clouds, Reap Havoc *Patrick Porgens and James R. Bukey*
Sinsemilla Marijuana *Otto Peep*
Making Stone Arrowheads & Scrapers *Gil Verde*
Condoms, These Days *Salli Rasberry and Laird Sutton*
Relative Poverty and Frugality *Paolo Soleri*
"Reality" and Redundancy *Gregory Bateson*
The Human Use of Inhuman Machines *Dave Caulkins*
Advice for the Computer-Lorn, or, Getting Yourself a Computer *Dick Rubenstein*
The Structure of Mystical Experience *Brother David Steindl-Rast*
Ritual . . . *Roy A. Rappaport*
Blessing Way Ceremony, Puberty Rite *Maud Oakes*

No. 7, Fall 1975

The High Frontier *Gerard O'Neill*
Testimony *Gerard O'Neill*
"Is the surface of a planet really the right place for an expanding technological civilization?" *interviewing Gerard O'Neill*
Deep Space Material Sources *Eric Drexler*
Caring and Clarity *conversation with Gregory Bateson and Edmund G. Brown, Governor of California*
Systems, Economics, and "Female" *Hazel Henderson*
Working in China *Orville Schell*
The Difference Between Unity and Uniformity *E.F. Schumacher*
Schumacher's Buddhism *Peter Gillingham*
From Field Guide to Western Oregon *David Schetzline*
Gay Access *Richard Hall and Dan Allen*
The Reactive Engine Paper *Terry Winograd*
From the Command Center: The Mayaguez Incident *Brigadier General Donald Sampson on the phone*
Gathering Challenge to Fiat Money *Carter Henderson*

No. 8, Winter 1975

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The Clothesline Paradox *Steve Baer*
What's Left? Revisiting the Revolution *Jay Kinney*
The Ohu Movement in New Zealand *Elliott Smith*
Nonviolent Direct Action Is Alive and Well in Europe *Lee Swenson*
Poems *Richard Brautigan*
A Guide to Horse Equipment *Jack Carroll*
Marlon Brando Plans a Whole Earth TV Special *conversation with J. Baldwin and Stewart Brand*
Confessions of an Ex-Blackjack Player *Rolf Cahn*
Homestead Bicycle Technology *Jim Burgel*
Access to Synthesizers *J.D. Sharp and Mark Garetz*
The Further Adventures of Huckleberry Finn *Baine Kerr*
A Brief Memoir *Anne Waldman*
Ancient Creek *Gurney Norman*
Interview with a Cattle Mutilator *Paul Krassner*
Sporting Deaths *Russell D. Chatham*
The Optimist *Don Carpenter*
An Abridged Collection of Interdisciplinary Laws *Conrad Schneiker*

No. 9, Spring 1976

Is Balance Really Possible Where Even Gravity Is Manufactured? (Comments on O'Neill's Space Colonies) *Ken Kesey, Russell Schweickart, Lewis Mumford, Lynn Margulis, Richard Raymond, Dean Fleming, Wendell Berry, Wilson Clark, E.F. Schumacher, Stephanie Mills, Steve Durkee, Steve Baer, Dennis Meadows, Stanley Marsh III, Paul and Anne Ehrlich, Ernest Callenbach, Carl Sagan, William Irwin Thompson, George Wald, David Brower, Michael Phillips, Ant Farm, John Todd, Brother David Steindl-Rast, Richard Brautigan, Peter Warshall, Anne Norcia, Marc LeBrun, Garrett Hardin, R. Buckminster Fuller, Paolo Soleri, Julia Brand, David Schetzline, John Holt, Erik Eckholm, Gary Snyder, Hazel Henderson, Anne Waldman, Vine Deloria, Jr., Gurney Norman, Gerard O'Neill, Stewart Brand*
The New Alchemists *John Todd*
Space Colonies, Ethics, and People *J. Peter Vajk*
Space colonies should stay away from the government for a while *Astronaut Russell Schweickart*
Prayer Breakfast *Gregory Bateson and Governor Jerry Brown*
Four New Poems *Gary Snyder*
More Highly-Evolved Toolbox *J. Baldwin*
Take As Directed *Ron Jones*

No. 10, Summer 1976

Olbers' Paradox *Lawrence Ferlinghetti*
Jacques Cousteau at NASA Headquarters
On Observing Natural Systems *Francisco Varela*
Carl Ortwin Sauer 1889-1975 *James J. Parsons*
Theme of Plant and Animal Destruction in Economic History *Carl Sauer*
Trees *Jean Giono*
The Hoedads *J.D. Smith*
Some Mice *Robert Horvitz*
The Space Crone *Ursula Le Guin*
Winning *Ron Jones*
The Education of Joni Mitchell
Its our very effort to make reality repeatable which Buddhism calls suffering *Zentatsu Baker-Roshi*

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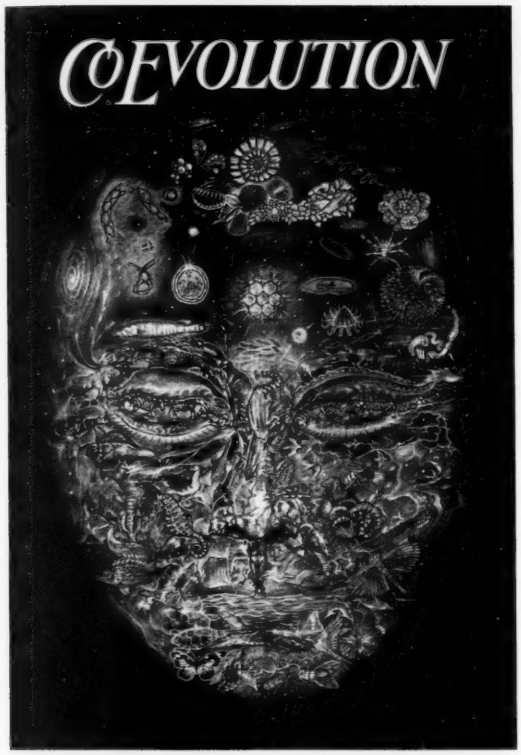

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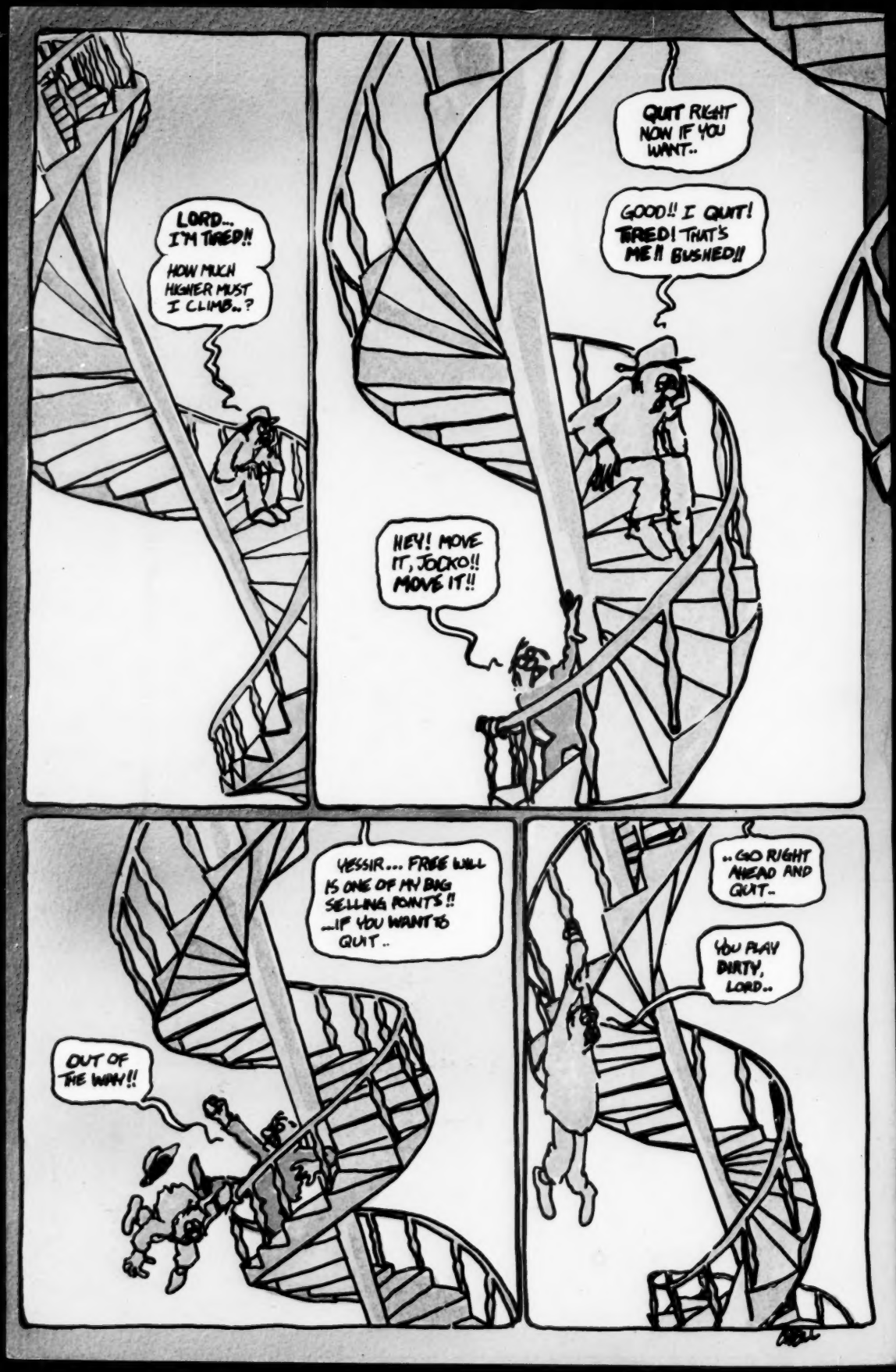
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..GO RIGHT AHEAD AND QUIT..
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